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Thursday, July 14, 1983

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Temporary staff Bill is diluted

by John Riley
THE controversial Euro-Bill on temporary workers which is bitterly opposed by the UK computer services industry was watered down in the European Parliament in Strasbourg last week.

The scrapped clauses included proposals that contract work should be limited to three months; that companies reveal to their permanent staff the qualifications and rates of pay of temporary staff, as well as the fees paid to contract agencies; and that agencies should be forbidden to charge a transfer fee or the contract worker takes on a permanent job with the client.

Another controversial clause, that temporary staff should be paid the same as permanent staff, was amended so that their remuneration must be "at least equal" to that of permanent staff, allowing higher rates of pay.

All contract agencies must be authorised by the relevant bodies in each country and if contract

agencies are not registered and go out of business, then the client company incurs joint and several liability for the wages and so on of the temporary worker. The original proposal demanded secondary liability.

In a preliminary comment Lea Clark, UK sales manager of Knight Programming Support and the Computer Services Association representative on a committee set up to oppose the EEC legislation, said: "Most of the sting seems to have been taken out of it, but the implications of social benefits need to be evaluated."

"I still feel that the proposed legislation is an interference. As for as the UK market is concerned, there are no abuses and the whole thing is just another burden on the employer."

Unlike the UK Parliament the European Parliament is only a consultative body, and its recommendations go to the European

Commission who will draft the final directive in secret. The Commission does not have to act on the Parliament's recommendations. The final decision will be taken by the Council of Ministers.

Future lobbying by the computer industry will be directed at the European Commission or at national governments, because the public debate is now over as far as Parliament and its committees are concerned.

The Confederation of British Industry opposes the whole legislation in principle and objects to the clause that details of temporary work must be defined in writing. A formal comment by the CBI also opposes the use of the word remuneration as it "could cover a number of items such as non-contributory pension arrangements, interest free loans and increments to long service which it would be unrealistic to extend to temporary workers."



OAKLEY... Warns British to beware of poachers.

Academics are selling souls abroad - Oakley

by George Black
SOME British academic researchers are selling their souls to foreign firms, according to Brian Oakley, director of the Alvey programme.

Oakley, who is in charge of the official five-year national computer plan, was speaking at a conference on collaboration between higher education and industry. The conference was organised by the Institute of Management Studies in conjunction with the Times Higher Educational Supplement at the London Business School.

Oakley warned British firms to beware of foreign rivals "pinching our technology from the very mouths of the academics".

The answer to the problem lay in the hands of UK industry, he said. It was causing British firms to take the academic world that bit more seriously.

"There is nothing like financial hunger in the academic world to stimulate co-operation with industry."

The drain of discoveries and inventions to foreign firms was a threat the country ought to take

seriously, Oakley urged. Oakley, who was appointed head of the £350 million project by Industry Secretary Patrick Jenkin before the general election, was secretary to the Science and Engineering Research Council.

"The fifth-generation scheme to marshal private and public organisations in an effort to combat American, Japanese and French competitors is being funded half by industry and half by the industry, defence and education departments."

Pressure has been put on many academic institutions to find alternative sources of income since the cuts in their grants in 1981.

GEC takes a shine to Torch

by John Kavanagh
TORCH Computers has been taken over by GEC in a move to solve the young UK firm's problems and bring the GEC into the UK microcomputer market.

The £32.5 million deal gives GEC 76% of Torch. Formerly Martin Vlieland-Boddy, the chairman, and Peter Harris, managing director, have their shares halved to 26%.

GEC has bought out the original backers, the Bermuda-based Newmarket, which had put £800,000 and owned 30% of Torch, and the Welsh Development Agency, which put in £250,000 and provided a factory, and venture by Bell Nominees.

GEC's move sees Torch taking a cash crisis which would have taken it back to these backers another £1 million.

GEC is known to be looking for investments on which to spend massive reserves of over £1 million. Interest on this cash has been £178 million to date. Turnover was up 11.4% to £5,460 million.

"We were vehement that it should not be foreign-owned," said Torch chairman Vlieland-Boddy. "We've turned down several foreign offers of buy-outs."

He said that with the new bid Torch was aiming at a turnover of £12 million in 1983-84, compared with £3 million in the eight months of trading. He would be about £3 million.

Part of Torch's cash problem came from allegedly faulty drives from the US manufacturer Tandon. Torch is suing Tandon for \$10 million.



ELSE... Confident forecast.

Else expects £15m for software scheme

by Kevin Cahill
THE government will find more money, up to another £15 million, if the current software product scheme is exhausted before 1985.

This was the confident forecast made by David Else, the National Computing Centre's manager who administers the scheme for the government.

The scheme was begun in 1973, but was little used or known until 1981, when the government increased funding to £1.5 million. By the following year that £1.5 million had been used up and after a series of meetings between government officials and industry bodies, the government decided to make a block allocation of £10 million to cover the period of 1982-1983. That, too, is gone, and £15 million more, allocated this year, is being used.

The object of the scheme, according to Else, is to provide direct, non-recoverable financial grants to companies engaged in the manufacture and marketing of software products.

This is in the form of an outright grant of 33 1/3% of the development and marketing costs of a project, from the time of approval of the project to the end of the two year period within the project must normally be completed.

The take-up on the scheme had so far amounted to about £3 million, and this was what had led the CSA and the NCC to reconvene talks with the government with a view to establishing what the prospects were for further funding.

So far the government had not committed itself, but had given clear indications through officials of the DoTI that more money would be forthcoming, if the scheme was successful.

Sperry recently announced that this deadline would not be met without giving the reasons.

The company is currently talking about first installations in March 1984, though American commentators now suggest that mid-1984 is more likely. The 1100/90 is liquid cooled, though so far Sperry have not revealed what the coolant is other than to say that it is not water.

Informed sources close to the company say that the principal problem at the moment is the

UK steps up Communist clamp-down

by Kevin Cahill

THE UK government is to introduce licensing controls on the transfer of information on strategic technology to some Communist countries.

The move will take the form of an amendment to the Export of Goods Act to come into effect on August 12 and will include further restrictions on the availability of technologies available for sale to the USSR and its satellites.

Details of the order are not yet publicly available but will be published within the next few weeks, according to the Department of Trade and Industry (DoTI), which will be responsible for the policing of the measure.

The move follows strong pressure from the Reagan administration in the US to curb trade, particularly in computers and software, between Western Europe and the Soviet Union and its allies.

This month's meeting of CoCom, the committee of NATO countries and Japan which governs trade with communist countries, broke up in disarray after considering US proposals to set up another committee which would exert tighter control over technical exports, particularly in the information technology field.

Observers feel that the differences between America and its

allies are unlikely to be resolved before the end of the year.

A DoTI spokesman said: "The UK has gone along with the Americans all the time," explaining that the Act was aimed only at things such as "blueprints and technical manuals accompanying a piece of equipment" but confirming that material covered by the Act "could be anything, including textbooks".

According to a lawyer for a leading UK manufacturer the Act lays itself open to "the most serious abuse", including providing the government with an open ended legal weapon to use against newspapers and technical journals.

The DoTI spokesman said that the Act would exclude material which has already been made available to the public.

The move by the UK government follows a series of top level meetings last month at 10 Downing Street between the Prime Minister and US Vice President George Bush, US Secretary of Defence Casper Weinberg and other US officials.

The Prime Minister then set up a special Cabinet sub-committee to consider the situation.

During the US-imposed embargo on equipment for the Soviet-Western Europe gas pipeline, the Prime Minister took a strong line to ensure that UK equipment for the pipeline would be delivered.

And over the past few months UK computer companies, including GEC, Ferranti, Marconi and Plessey have been having discussions with the DoTI over US threats to stop delivery of some components which the companies use in systems which could be, and have been sold to Eastern European countries.

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GEC teams with General Instruments

THE UK's GEC and General Instruments in the US have set up a joint venture called GEC-Jerrod, which will develop and market a range of advanced communications equipment for cable systems and satellite networks in Europe and the US.

The venture is an alliance between GEC's McMichael military, broadcast, environmental control and mobile radio subsidiary, which combined with its domestic radio and television interests last September, and General Instruments cable television systems company.

DEC is set limit

DIGITAL Equipment users have set the company an August deadline for a response to their views on the axing of upgrades for the DECsystem-10 and 20 mainframes. DEC and its users met in the US last week to discuss the results of a customer survey on the company's plans to upgrade its 36-bit computer installations to the newer 32-bit Vax range.

Mitel shortfall

CANADIAN telecommunications systems manufacturer Mitel had a \$4.5 million shortfall in its first quarter to May 27, although sales revenue at \$363.6 million was 19% up on the same period last year. Mitel blames the loss on a drop in sales and a delay in benefits of cost cutting exercises hitting the balance sheet.

More for Trilogy

TRILOGY Corporation will later this week announce another major investment in the company by a large US corporation. The name of the company has not been disclosed but General Electric is understood to have had talks about such an investment with Trilogy.

Atari replaces its chairman

by Robert Parry
and Kevin Cahill
ALLING video game and micro builder Atari has replaced its chairman and chief executive of five years Raymond Kassar. James Morgan, from cigarette maker Philip Morris, will take over from Kassar, who has resigned his post but remains with Atari as a consultant.

Atari, a subsidiary of Warner Communications, is bidding to regain its position at the top of the consumer electronics tree. It reported an operating loss of \$46 million for the first quarter of this year, with a larger second quarter loss expected, and is laying off employees by the thousand while moving manufacture to the Far East.

As well as the personal computer market, which Atari is attacking at all levels up to 16-bit with

IBM PC look-alikes, the company is planning to move into the telecommunications line with a range of computer-based phones to be introduced under the AtariTel badge.

The US Securities and Exchange Commission added to Kassar's troubles last December when it launched an investigation into alleged insider trading by Kassar and others. The investigation continues, but is said to have no bearing on Kassar's resignation.

Meanwhile at arch-rival Commodore, there is also change at the top. In the words of the US press, Jack Tramiel, the ebullient president of Commodore International has taken over - "again".

Tramiel, who is founder and chief executive officer of Commodore International which is based in Bermuda, hired Bob Lane as president of Commodore's North American operations just seven

months ago.

Three weeks ago Lane left the company, following a long line of short stay senior executives.

The company described Lane's tenure as a trial period which did not work out. Lane came to Commodore from Northern Telecom. He was not available for comment. Commodore has reported rapidly rising sales for the first two quarters of this year, based on a major expansion in North America, which has not heeded its traditional key market.

The rise in sales comes in the wake of a rapid expansion in North American manufacturing capacity, alongside a \$6 million plus advertising campaign.

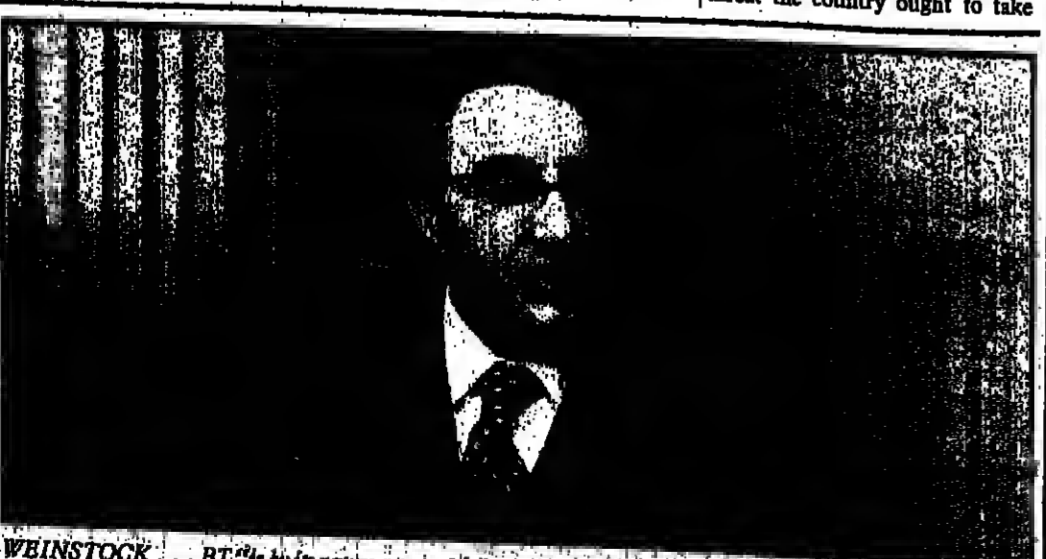
Commodore has so far shown no signs of suffering from the price attrition in the lower end of the market which has hit Atari and Texas Instruments.

Weinstock criticises private BT plan

GEC CHAIRMAN Lord Weinstock last week publicly criticised the government's plan to sell 51% of British Telecom into private hands. His comments have added fuel to the Post Office Engineering Union's campaign against the sale.

"I am not clear what point there is in privatising a company which is by its nature a monopoly," Lord Weinstock said. "I don't see how you can have anything other than a monopoly running a national communication service."

He added that if the government was determined to go ahead, BT's monopoly should be reduced as far as possible, although he pointed



WEINSTOCK... BT "is by its nature a monopoly".

out that the Bill now before Parliament did not allow for this. Lord Weinstock also called indirectly for a "Buy-British" policy. Questioned on the arguments overseas had often been developed with local government funding. If

the UK followed such a course it could lose its domestic research and development strength. This comment comes in the wake of reports that BT is talking to US giants IBM and American Telephone and Telegraph about the sale of US communications

equipment in the UK. Earlier this year BT chairman Sir George Jackson warned that UK suppliers with a blinding attack on their delivery performance. He said that there was a five-month average delay on transmission equipment deliveries.

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Sperry's new mainframe isn't cool

by Kevin Cahill
THE delays on the 1100/90, Sperry's new mainframe, now look to be due to technical problems with the cooling system.

The 1100/90 machine range in Sperry's answer to the Sierra-Trout mainframe which IBM is expected to announce later this year or early next year.

The range runs in speed from a single 7.5 MIP processor, to a 25 MIP quad processor and was scheduled for delivery in the US in the last quarter of this year.

Sperry recently announced that this deadline would not be met without giving the reasons.

The company is currently talking about first installations in March 1984, though American commentators now suggest that mid-1984 is more likely. The 1100/90 is liquid cooled, though so far Sperry have not revealed what the coolant is other than to say that it is not water.

Informed sources close to the company say that the principal problem at the moment is the

cooling system, which is understood to have overheated several times in trial runs at the company's Roseville, Minnesota development centre. The 1100/90 range is based on emitter coupled logic, the standard semiconductor technology used in all mainframes except IBM's and Honeywell's.

IBM is currently predicted to be switching from transistor to transistor logic for the Sierra-Trout range because of the lower heat dissipation characteristics.

Trilogy Corporation, with

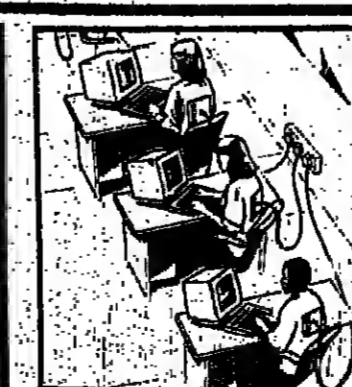
which Sperry recently did a \$42 million deal for technical knowhow also uses ccl, and the continuing problems with the 1100/90 throws new light on the link between the two companies.

Trilogy Corp. has substantially solved the problem of cooling very large chips and this now looks like the key immediate input to Sperry.

The official Sperry position at the moment is that the delays were imposed to ensure that the 1100/90 met the same standards of quality as the rest of Sperry's products.



Adabas: Jenkinson is after DEC customers.



The Automated Office



Lundy's Askew and the Falklands war

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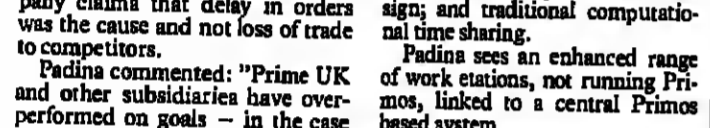
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In addition to the 9950 launch, the company also announced price reductions on its 500 byte and one Mbyte memory boards, and also a new intelligent communications

But a big institutional investor started buying hundreds of thousands of shares on the first day and the price recovered to close at

million to back the IBM leasing specialist's expansion in the US and Europe. Chairman Paryn Mitchell said the US operation was a "sensational" success.

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...tion of Computing Machinery.

JENKINSON . . . IBM can go off in a number of different directions.

users. Most could survive one day - but we would be very concerned if this action was extended."

ICL would not comment on the pay talks.

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Big disc rivals challenge IBM

by John Kavanagh
IBM is about to face stiff competition in the big disc market. Plug-compatible manufacturers BASF, Memorex and Storage Technology are in the final testing stages at user sites for their rivals to IBM's 3380 2,500Mbyte disc system.

IBM was hit by manufacturing problems early last year, but an independent survey in April showed that the 3380 was now the most reliable disc system ever.

The company had shipped over 15,000 units by the end of May.

But IBM's rivals now expect to make an impact.

Colin Cook, European marketing manager at Storage Technology, said: "Our first test was at a bank in Denver and other test systems are going in this month. These systems will take off like a

rocket. We have masses of orders even before we go into production."

Cook agreed with a forecast by research firm Frost and Sullivan which showed a rebelling of sales to \$1,000 million this year and a further doubling in 1984.

But Peter Harper, head of marketing at BASF's UK computing division, said users were still feeling their way. "IBM expected a tremendous influx of 3380s, but so far we've found users prefer to take one string of discs and experiment with it," he said.

"One UK site went from 3350s to 3380s in a weekend, but we think that's a bit risky."

While big discs are taking off, Cook said the 3380 market could soon be threatened by optical discs. At the start of next year Storage Technology could announce

its optical disc with 4,000Mbytes of storage on a single side of one disc.

"This storage size and performance could undermine the whole 3380 market," he said. "And the big advantage is that you can dismount the discs for security."

One problem would be customer education. "Users will be able to reconsider applications which have been shelved because of cost," Cook said. "Big files held on tape, paper or microfilm could be put online. There are enormous implications."

Cook quoted a US market survey which said the read-only optical disc business could be worth \$5,900 million by 1990.

Harper said BASF was working on optical discs, but he felt wide use of such systems was two or three years off.



COOK... "We have masses of orders even before we go into production."

Wicat takes over Europe arm

by George Black
WICAT, the Utah firm which was first in the field with its 68000-chip supermicro, is taking over its own European organisation from its agent, Atch of Zurich.

The operation is being headed by Roger Llewellyn, recruited a month ago from rival 68Kbyte micro maker Altos.

Llewellyn, formerly of Prime and Hewlett-Packard, spent two years with Altos setting up its European division as its North European sales manager.

His chair at Altos has now been filled by another ex-Prime man, Peter Thomas.

Wicat is about to open a second British office to back up the Birmingham base which began work 14 months ago. The new one is likely to be at either Bracknell or Camberley.

To beef up the expansion Wicat raised almost \$80 million on the New York stock exchange last week with no issue of four million shares.

Company spokesmen said the intention had been to issue only three million, but more had been offered by public demand.

The coming drive will be aimed at large dealers, software houses and systems builders and technical colleges.



LLEWELLYN... "Wicat CBT package was first serious challenge."

Total staff should increase from 10 to 20 as Wicat pushes into the computer-based training area, in partnership with Thorn-BMI's Datasolve subsidiary.

Wicat earned £2 million of its 1982 revenue of \$26½ million in the UK and intends to increase the European percentage in the expected income of \$40 million this year.

Thorn's other high technology company, Software Sciences, continues to act for Wicat in the commercial systems area and Wilkes Computing still supports Wicat machines with technical services.

Llewellyn claimed that the Wicat CBT package, Wise Author System, was the first serious challenge to Control Data's Plato.

Jobcentres are poised to link up in national network

by Nuala Moran
NEXT month sees the start-up of the final link in the Manpower Services Commission's national network of Jobcentres.

The seventh Perkin-Elmer mini in the network will be commissioned in Basingstoke in three weeks. The machine will be linked through PENnet, the company's minicomputer networking system, to six other regional computer centres via British Telecom's Packet Switching System.

This means that 750 of the 1,000 Jobcentres around the country will be able to communicate with each other, using Trend KSR printer terminals. Smaller Jobcentres without terminals will communicate via a parent office. The cost of the network was £3.5 million and it took 4½ years to install.

The six regional centres already operational are at Newcastle, Bir-

mingham, Bristol, Glasgow, Leeds and London. The centres were isolated until late 1982 when they were linked via PENnet.

Each centre has a Perkin-Elmer 3230 mini, running the Vacancy Circulation and Statistics System (Vacs).

Vacs has 26 transactions, including the production of vacancy printouts, free format message generation, input of data advising that a job has been filled, details of people going after a particular vacancy and statistical data input.

Installing the system speeded up the transmission of information about jobs. This means that vacancies are available to more people over a wider area. One of the main advantages from the Manpower Services Commission's point of view is that the collection and preparation of job statistics is quicker and not so labour intensive.

Each of the regional centres has links to an average of 130 terminals. Vacs can be extended to 240 online terminals per printer. The London centre, which is the largest, supports 217 terminals.

There is an eighth Perkin-Elmer 3230 in the system, at the commission's headquarters in Sheffield, which is used for development work.

Also in Sheffield, the commission is planning a national database of around 5,000 hard-to-fill jobs, or jobs that will appeal to mobile jobseekers. These vacancies will be fed from the regional computers to a Perkin-Elmer 3210 mini in Sheffield.

Jobcentres will be able to contact Sheffield with requirements and VDU operators will search the database for suitable jobs. This system will be running by the end of 1983.



Scottish Widows get the ball rolling in the Birmingham qualifier way back in April, when they finished second to Kalamazoo.

DP Olympic finals teams are named

IT'S Computastars final time again and the 43 teams going to Birmingham on Saturday have been announced.

In addition to the main competition, Computing returns. Eight male and female teams are entered for this tug of war contest, which proved to be one of the highlights of last year's final.

As if all this were not entertainment enough for one day, it would appear that *Computer Weekly's* sports reporter is likely to be preoccupied into actually competing in a little extra something. So don't be surprised if he turns up wearing a fake plaster cast.

The show starts at 10.30 on Saturday July 23, and it will cost £1 to get in (50p for kids) to the Alexander Stadium, Birmingham. Don't miss it.

Teams, groups and numbers

Group 1:
1 Rank Xerox 1
2 Digital 2
3 Computer Special Systems (SU)
4 Commercial Union
5 Centre-File

Group 2:
6 Thorn-BMI
7 National Provident Institution
8 Ford Motor Co 1
9 Caplan (SU)
10 Legal & General Ass Soc (Vets)

Group 3:
11 British Aerospace 2 Kingston
12 Bank of America 7
13 Pfizer Pharmaceuticals
14 Shell International Co (SU)
15 Heywood & Partners 1

Group 4:
16 Barclays Bank International 1
17 Hartley Cooper (SU)
18 Open University
19 London Borough of Lambeth
20 Crawfords Computing 1

Group 5:
21 Kalamazoo 1
22 Bank of America (Vets)
23 Scottish Widows Fund & Life Soc
24 British Rail Board
25 Royntree Macintosh 1

Group 6:
26 Kalamazoo 2
27 Barclays Bank Radbrooke Hall
28 British Ship Corporation
29 Scottish Widows Fund & Life Soc
30 Robert Horse 1 (SU)
31 Royntree Macintosh 2

Group 7 Ladies:
32 Barclays Bank Radbrooke Hall
33 Legal & General Ass Soc
34 Bank of America

4 Kalamazoo
5 Bury Services
6 Digital

Group 8 Ladies:
7 Mercantile Credit
8 Computer & Systems Eng 1
9 Surrey County Council
10 Commercial Union
11 Centre-File
12 Crawfords Computing

SU denotes small unit team
Vets denotes veterans team

Main Computing teams:
A Plessey Management Services
B Centre-File
C Inland Revenue
D Thorn-BMI
E Profit Data Systems
F Barclays Bank International

Female Computing teams:
A Plessey Management Services
B Barclays Bank International
C Inland Revenue

SALES BRIEF

Barlow buys Scicon software

MATERIAL handling equipment supplier Barlow Handling has ordered the Scicon Distribution System software, developed by Scicon, with backing from the National Computer Centre software products support scheme. The system runs on Hewlett-Packard 3000 minis and Barlow will use it to process orders and monitor stock levels of 15,000 spare parts lines. It will run on minis in 100 divisional offices and communications with terminals and printers in 11 branch offices. The first of the four offices is due to go live by the end of the year.

Data collection

THE Police National Computer Unit at Hendon is to install a diffusion Computers R2M Telecentre for the collection of data to be passed via magnetic tape for processing on the unit's Burroughs B7700 mainframes. The system has a 128Mbyte memory, eight VDUs, a 33Mbyte disc drive and a 180 character per second printer. It replaces a paper tape based system.

Offices automate

DATA General has won a contract to supply an office automation network supporting 14,000 users at 800 locations over the next six years for the US Department of Agriculture's forest service. More than 800 systems based on DGC series 32-bit minis running V. CEO (Comprehensive Executive Office) software are to be installed in the first three years. They have an average value of \$85,000 each, bringing the three-year total to \$75 million.

Poly simulates

LIVERPOOL Polytechnic has bought its third Solstium motion navigation instrument simulator 15 years. The latest system, which cost £250,000, uses a Digital Equipment PDP-11/34 to process a radar coastline image from the data, in place of the optical system based on photographic plates that was used in earlier models. It includes an instructor's console which can be used to enter and manoeuvre up to 24 target ships on the screens of the three navigator consoles. The system can simulate navigational aids such as Decca Navigator and Loran C.

Monitor the heat

OXFORD Automation has won a £230,000 order for computer-controlled temperature monitoring systems for two reactors at the Central Electricity Generating Board's Berkeley nuclear power station in Gloucestershire. Oxford's System 86 monitoring and control equipment has now been ordered by four CEBB regions.

Seventh Bliss

BBAUFORT Computer Developments has won the seventh order for its Bliss Insurance servicing software from Insurance Corporation of Ireland. The software will run on the corporation's IBM 4300, allowing staff to process and business interactively. It will also produce policy documents and letters automatically in support of its life and unit trust linked insurance.

ICI picks Merit

WIGAN-based Merit Computers has supplied a 10-terminal local area network based in Digital Micro Systems hardware for use in the foreign exchange dealing room at ICI's London office. Merit has been involved in the specification and development of the system from the early stages. ICI previously used a timesharing bureau to manage loans, borrowings and foreign exchange dealings, but wanted quicker access to management information.

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Kevin Cahill called on a small US outfit and found...

What the Giro and the Falklands had in common

WHAT unites an element of Britain's victory in the Falklands with the National Girobank?

Not, as you might first assume, anything obvious like money or the Post Office, but a small and to some extent relatively unknown American company called Lundy Electronics.

Based at Glen Head, an hour's run along the Babylon section of the Long Island railroad out of New York's Penn Central Station, Lundy had the slightly paradoxical distinction of supplying the RAF with what turned out to be the

oldest and most effective anti-radar, and consequently anti-missile, defence of all.

This is chaff, a very finely chopped up version of its foil, which is scattered from pods aboard an aircraft, and which provides a complete screen for aircraft being scanned by enemy radar — in the case of the Falklands, by Argentinian radar.

There are even rumours that the form of chaff supplied by Lundy was many times more effective than the beamed electronic counter measures now so expensively

popular with the world's air forces. But where does the Giro come into all this?

It comes in because Lundy supplied National Girobank at Bootle, Merseyside, with its huge, some say the biggest, single optical character recognition (OCR) installation in the world.

The OCR stations at Bootle, 300 in all, are used by National Giro to read key account data on cheques and payments coming into the centre at the rate of around one million a day.

Each cheque or document is fed

GOOSE GREEN... And a Hercules approaches over wrecked Argentine aircraft.

into a narrow channel, where the permanent account data, such as account and cheque number, is read before being displayed on a screen where the input clerk can enter the dynamic numbers such as amount and account destination of the cheque or payment.

It's a marvellous reference site and Adam Askew, Lundy's UK

managing director, is enthusiastic about future orders at Giro and the Post Office. Askew is perhaps the ideal person to explain the apparent paradox of a company with a turnover of just \$28 million last year that is a key supplier in three widely disparate areas of high technology.

He was the national marketing manager of Farrington Data Products, the source of Lundy's OCR equipment and expertise, and has been with that technology "for longer than he cares to remember".

Farrington Data went into liquidation in the early seventies under the accumulated weight of a huge stockpile of the then massive 3030 page OCR readers, but also owning many of the original patents in the OCR and, indeed, voice recognition field.

Lundy, a very small electronics company with a chaff factory in Florida and an electronics factory on Long Island, decided that it could use the data input capabilities of the Farrington equipment and bought out that part of the company from the receiver.

At about the same time Lundy had begun to develop an early CAD workstation and some software which it was marketing on a virtually one-off basis in the US.

"Back in those days OCR was big kit, really big. The 3030 page reader, which was limited to just two fonts, OCR-A and OCR-B, weighed nearly a ton," according to Askew.

Now, the equivalent to the 3030 comes in the form of Lundy's newest product, a desktop page reader that can read up to seven print fonts, including standard pica and elite, two of the commonest typesfaces.

According to Askew the Lundy low cost page reader, which is close to breaking the print format barrier which has always been the major handicap to widespread OCR use, will be used principally for applications like word processing, cataloguing and so on.

Lundy, which still retains the Farrington name in its UK title, has always exercised an unusual degree of freedom for a UK subsidiary of a US based company, but even in the recent past up to 50% of Lundy's turnover has come from the UK.

This is now changing, along with the public fortunes of the company, which has become one of Wall Street's widely tipped share potential winners. Part of the reason for the change and the rapid growth at Lundy is generally credited to Bill Stout, the ex-Storage Technology executive who became the company's chief executive on the founder's death three years ago.

With the owner's death the company was able to release a large block of shares and raise funds from the subsequent stock sale, which was augmented by a windfall legacy in the shape of the founder's life insurance policy which brought in \$3 million.

This gave Stout just the cash he needed to start the company into a cautious but highly successful development of its data input expertise and technology, leading to

a whole range of new, high-tech products. The one the company is showing off is its new bank machine which combines a usual bank teller data processing activities with the ability to check and redisplay a customer's signature.

The whole device, called FMS, is little bigger than a standard Apple II system of



ASKEW... Enthusiastic.

There are rumours that the form of chaff supplied by Lundy was many times more effective than the beamed electronic counter measures now so expensively popular with the world's air forces.

found widespread acceptance among banks in the US who had a problem of forged signatures. Stout now reckons that both the financial and technological something like the right mix to justify the growing of regional and international offices he is creating across the UK.

Not that Stout has neglected the UK, as it was in the Lundy days, is to be the first of the worldwide marketing which is being undertaken by Lundy.

So far this has led to a number of conditional orders where it scored substantial wins in the early seventies with fast document readers which lowered and generally improved more impressive page reader outputs.

From the technology point of view, Saga has not made any advances. The PBS-800 is based on a Z80A chip. This has the advantage of being widely available and having plenty of software back-up. It also avoids the problem of government export controls often associated with exporting more sophisticated technologies.

Although the machine will be manufactured in many parts of the world, Saga intends that each machine will be standard. Apart from the proprietary main circuit board, manufacturers will be able

MICRO NEWS

Floppy standards are on the cards

THE microfloppy disc standards have taken another twist — in the UK this time. In an attempt to influence the market at an early stage, before any of the various rival sub-4-inch disc sizes and formats have taken off here, the Central Computer and Telecommunications Industry (CCTA) has got together with other interested groups to select a size and format as a public service procurement standard.

CCTA is joined by British Telecom, the Local Authorities Management Services and Computer Committee and the National Health Service, plus a representative of the UK micro-makers group, British Microcomputer Manufacturers Group.

They met towards the end of last month and agreed that decisions should be made quickly. They hope to decide on a disc size by the middle of August and formatting

arrangements by November — in time for Computer Weekly's own trade show, Compec.

The CCTA's fear is that microfloppy discs will take off as mass storage media for portable micros that will bridge domestic and business use before any consensus arises. CCTA is concerned that there will be problems both of compatibility and in the bulk purchase of disc media should several systems become common.

It wants to set a standard for size and format so that discs can be read by the various different makes of micro found to the public sector.

But any proposal the group comes up with will be a recommendation, rather than a standard with any teeth.

There are really only two contenders for a microfloppy standard around at the moment, led by Sony with its 3½-inch unit and

Hitachi with a 3-inch.

There is still a dark horse — IBM with a much-rumoured but as yet unannounced 3.9-inch product — and there's a fourth contender in the form of a 3¼-inch system supported by Dysan, Seagate and Tabor.

The Sony drive has attracted a large band of supporters, headed by Tandem and Shugart, and Sony has been actively lobbying to get its proposal accepted as standard.

So far, with a £37 million order from ACT for drives for Apricot, the Sony drive is the only one to be adopted by any serious British manufacturer.

Meanwhile Hitachi is gearing up to get moving with large volume deliveries of its 3-inch drive.

"We welcome the CCTA move," says Ted Marshall, Hitachi computer products manager, "and would be very happy to talk to them."

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Welsh to make US micro

by Nuala Moran
WILCOX Computers, the Wrexham-based company that is owed by the Welsh Development Agency, is negotiating a licence to manufacture the US-designed Saga Systems PBS-800 microcomputer.

Discussions have been going on for around six weeks, but a business plan has not yet been drawn up.

Wilcox will get assistance from Saga, including market studies. Initially all components will be imported, but Wilcox will then go into sourcing everything itself, apart from the board.

Saga Systems, based in Fremont, California, was set up two years ago. It is a marketing organisation, rather than a computer vendor. Its main activity involved setting up joint ventures with manufacturers in various countries.

The deal involves training for the "start-up" team, service training, sales and product training if required, advertising support, technical updates and central materials procurement.

Apart from the deal with Wilcox, Saga has joint ventures going in Saudi Arabia, Australia, India and Mexico.

Saga has taken an unusual approach in designing the PBS-800 for the international market. Bill Fisher, vice-president of Saga, explains that this is because the company's seven co-founders have an average of 15 years each in international business and know the market.

"We all had experience in working internationally and found we were always apologising because US-built machines have idiosyncrasies which suit them for the American market. This is because the market in the US is so strong that all other markets are treated as secondary."

Fisher feels that the US market for small business systems has just about reached a saturation point, and so he wants to turn to the vast markets outside the US. To address these markets the PBS-800 has been designed to avoid any American idiosyncrasies.

From the technology point of view, Saga has not made any advances. The PBS-800 is based on a Z80A chip. This has the advantage of being widely available and having plenty of software back-up. It also avoids the problem of government export controls often associated with exporting more sophisticated technologies.

Although the machine will be manufactured in many parts of the world, Saga intends that each machine will be standard. Apart from the proprietary main circuit board, manufacturers will be able

to source components wherever they choose, but they will have to satisfy Saga that the specification is exact and freely available.

The outstanding feature of the machine is its language capability, making it readily adaptable to local markets. By interchanging EPROMs with different character sets, and using the software Saga is offering in many different languages, the machine quickly adapts for each market.

The major European languages are already available, and as a gesture to Wilcox, Saga has produced the software to run the machine in Welsh. This will appeal to the



FISHER... "US-built machines have idiosyncrasies."

business market in Wales as all business forms have to be in English and Welsh.

Saga is looking at the possibility of using the language capability for language teaching.

The PBS-800 comes with software and hardware tools. There are two diagnostic programs to help with simple engineering problems, and a tool kit including such things as screwdrivers so that minor faults can be quickly repaired.

Saga does not want to go faster than it can manage. "We are prepared to see people put off by waiting lists," says Fisher.



MARSHALL... Welcomes the CCTA initiative.

Torch sues Tandon for faulty drives

by John Kavanagh
TORCH Computers, the British micro maker taken over by GEC last week, is suing US disc drive giant Tandon for \$10 million. It is trying to regain last year's losses, which it alleges were due in part to faulty drives from Tandon.

Half the initial batch of 400 Tandon drives did not work, says Torch chairman Martin Vileland-Boddy, and many that did gave out static discharges only discovered when user systems were running.

Some drives had circuit boards and even heads missing, he adds.

"We're suing for lost business, lost reputation and costs," says Vileland-Boddy. "Our costs have been astronomical: we've had to send engineers to user sites in places like Canada."

Tandon attempted to rectify the problems, but later shipments were still faulty, so Torch cancelled the contract. Since then it has used drives from several other suppliers without problems.

In last week's news of GEC's purchase of 76% of Torch, the price GEC paid was inflated by a misplaced decimal point. GEC bought out the original backers for £3.25 million, not £32.5 million.

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Microsystem to emulate

by John Riley
MICROSYSTEM Services, High Wycombe-based supplier of PROM programmers, is to distribute US-based Emulogic's microcomputer development system.

The Emulogic ECL 3211, based on a Digital Equipment PDP-11, using DEC terminals and storage devices, supports in-circuit emulations for 8, 16 and 32-bit designs.

Says Microsystem Services managing director, Jim Knott: "The ECL 3211 emulates in software with great flexibility and speed."

The price is between £12,000 and £25,000 per development station.

George McKenna, Emulogic's president, claims that the system can support new chips in three to six months, compared with the average of 12 to 18 months in the industry. "We've designed everything in the emulation boards," he says, "and just need to redesign the pods."

The Test disc drives have been adapted, with intelligence added, so they automatically sense the presence of discs in the drive. When a planned 8086 add-on board giving 16-bit operation comes along in September, there will be auto sensing of 8-bit or 16-bit programs.

Micro News is compiled by Robert Parry

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PLATFORM

Hannan Rose is an independent consultant.

Does the privacy Bill really get the balance right?



THE House of Lords debated the Data Protection Bill on Thursday July 5. This was the second reading of the second bill. The original bill had completed all its stages in the Lords and was being considered by a Commons committee when the general election was called. Now the whole process has to begin again and the previous arguments repeated.

To say the least, the debate was marked not merely by the usual decorum of their Lordships' house, but a barely suppressed sense of weary boredom. As Lord Elwyn-Jones, leading for the Labour opposition, elegantly put it, there was a sense "not only of déjà vu but of déjà vu".

The legislation is essentially the same as before, although the government has taken the opportunity to deal with some of the points raised in debates earlier this year on the original bill. The general direction of the changes can be assessed from the reactions of various speakers in the debate.

Lord Mottistone, who was assiduous in presenting the case of the CBI (as well as sometimes contradictory ideas from others), unreservedly welcomed the "improvements", felt that "the main body of the work has been done" and hoped "that we shall be able to deal with this matter reasonably expeditiously and get it on the statute book as quickly as possible".

He believed "that we have already fought the main battles and that we should view this occasion as the time when those battles have been fought. It would be slightly tedious for the House to go over ground that we have already covered."

Labour, Liberal and Social Democratic peers regretted that the government had made no concessions whatsoever on the issues which they had previously raised — for example, the scope of exemptions, the potential pressures upon those who hold data to breach confidentiality in certain circumstances, the absence of any advisory committee and of any provision for even voluntary codes of practice to be recognised.

They disagreed (in the vehement yet polite manner of Lords) with Lord Mottistone. As Lord Donaldson of Kingsbridge said: "The point is that we now have a chance to put right things which are grossly wrong. I hope that we shall fight to the last minute of the last hour to do so."

Whatever the rhetoric, there can be little doubt that the government will, following the election, be at little inclined to accept amendments on matters of principle from the opposition as it was before.

Hannan Rose

10 YEARS AGO

FROM COMPUTER WEEKLY OF JULY 1973: The government came in for strong criticism for the Commons Select Committee on Science and Technology for failing to "establish definite objectives for the British computer industry. The committee wanted the government to purchase the equipment best suited to its needs regardless of origin, although it recommended that 'a strong independent industry for

the supply of equipment and services should be fostered in the UK'. ICL sold a 256K VDU-based hotel reservation system. IBM launched the System 3/Model 15 to fill the gap between its existing System 3 machines and the 370 series. The company also announced later in the year that it was giving a 512Kbytes of memory on the 135.

PROFILE

Mid-Atlantic manager who puts agility at a premium

PAUL BAILEY, Digital Research's director of European operations, is the archetypal mid-Atlantic man. This is partly because he has joined the small club of young, fourth-generation computer executives whose rule-of-thumb program reads: "If day equals Tuesday, place equals California." And it is partly that most of his life has been a bit like that anyway.

He was born in Nigeria, went to school at Douai in Berkshire and to university in Bristol, while his parents lived for much of that time in the US. After taking a degree as an electrical engineer — like his

by George Black

father and brother — he worked for the Ministry of Defence at Aldermaston before going abroad again. For 10 years he worked for Tektronix in Holland and became its European marketing manager.

Oddly his decision to go to Digital has brought him back to within a few miles of his school and his first job: now he has anchored himself at Newbury. But his duties won't allow him to become desk-bound, because his brief is to establish the firm as an integral part of the microcomputer software scene in all the major European countries.

"Globetrotting is just an extension of what I have always done," he says, brushing aside any suggestion that his first year with Digital must have been pretty fraught. "No, it's really been a lot of fun," he insists — though if he

DOWNTIME

Nice one, er, David

PERHAPS the most salient feature of Paradyne's new UK management team is that they are all called David.

There's David Hobin, the managing director, who came from the parent company in Florida; David Crofts, the vice-president for Europe and ex-Honeywell; David Spicer, the director for business development in Europe; and David Houston, the director for product marketing.

Why no Oakley names?

BRITAIN's front line troops in the battle against the Japanese for domination of fifth generation development are still maintaining an SAS-style anonymity. Field Marshall Brian Oakley announced three weeks ago that his lieutenants had already been drafted from civvy street ready to attack the Nips, Yanks and Frogs.

But so far, the four war-



BAILEY... "It's no good analysing problems to death."

wants to check if everyone else finds the pace that easy he should ask his receptionist.

Bailey is one of a little group of Tektronix people who migrated to Digital recently. Chief among these was John Rowley who was responsible for persuading him to follow.

"I didn't know much about Digital though the name CP/M seemed to be everywhere. I went over to Pacific Grove, Monterey, and found a lot of enthusiasm there. There seemed to be a lot of activity late in the evening, though

there was also a lack of professionalism in some areas."

The success of the CP/M family of operating systems on 8-bit micros had given Digital an \$8 million revenue and a staff of 120.

Rowley believed, and quickly convinced Bailey, that Digital should stop being locked into the West Coast of America and get itself dispersed as an international organisation.

Rowley is now company president and founder Gary Kildall has moved aside to concentrate on research.

"Gary doesn't get his kicks out of managing a complex corporation. He likes pounding away at a keyboard and producing elegant code," Bailey explains. "Kildall carries a micro wherever he goes. He's an absolute demo coder. He'll plug it in at an airport waiting lounge. The only place he can't use it is on the plane — but he would if he could."

Rowley's efforts have already paid off, with Digital expanding to 350 staff and income at the end of the year on July 31 up from \$18 million to around \$40 million.

"These figures tell you a bit about what has happened at Digital. Up to income of \$8 million you can still be pretty loose. Above that you start to get into problems of organisation and balance."

Now the firm has six US offices and branches in Britain, West Germany and Japan.

"What has been most frustrating for me has been waiting for operations to come on stream. I've been impatient to get new people on board and frustrated by the delays."

"Agile" is a key word in Bailey's vocabulary. Praise is given by his agility rating.

"John Rowley is a very quick decision-maker. Give him a minimum of information and let him take an instant decision — was occasionally, but not too often."

And again: "I prefer an open environment, where you can see results quickly. It's no good analysing problems to death. If you do that, the competition will topple your product and it won't matter anyway."

One in the eye

SEEBING the sparkling new logo for the renamed investor firm Finance for Industry — which now goes under the name Investor in Industry, or 3i — I felt the going of dim memories of my classic education.

It was the conjunction of the figure three and the eye that formed the dot of the 'i' that did it. Then it came to me.

The Grail — those half sisters of the gorgons who told Perseus the way to the gorgons' lair so he could lop of Medusa's head — had only one eye between them. And only one tooth.

Then Perseus turns up, he grabs the eye and threatens to take the tooth, too — unless the Grail comes across with the info. They do, and he gives them back the eye and the tooth.

But there the resemblance ends. The successful 3i can be nothing like the blind and toothless Grail held to ransom by the man they help, can it?

Squeak of protest

XEROX is miffed. Apple is getting all the credit, it says. For what? Inventing the mouse, it used on the Lisa micro. "We're cheesed off," said a Xerox spokesman.

And I always thought Xerox created mice on the sixth day.

Chad

ComputerWeekly

Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS

Thursday, July 21, 1983

The government pots for reds

THE Glorious Twelfth is the traditional time for Parliament to prorogue. The solid work of the session should be accomplished if the managers of the government's business have done their job and the MPs deserve both a chance to rest with their families and a chance to return to their constituencies.

Moreover, it is the beginning of the grouse season. But this year the government and the MPs will shoot more than grouse on the twelfth of August. They will have embodied a law which could severely inhibit the free flow of technical information which has been essential to the development of the computer industry.

The government will accomplish this merely by passing an Order in Council, having given due notice, which it did last week, that it intends to control among other things, the passage of technical information to Communist countries.

The MPs will have done so by not opposing or questioning the order. No debate is necessary to establish the government's proposals as statute law — the order will be just as valid as any other part of the Export of Goods Act as first debated in Parliament.

Debate on the order will be difficult — for its details will not be published for a week or so. What little is known of it is that it "will be designed to control" a number of exports, among them technical information, but also including; certain aluminium powders used in solid fuel rockets, semiconductor diodes and unspecified electronic components.

It is already an offence under the Official Secrets Act — one which can rise to the gravity of treason — to supply official information or other information that could be useful to an enemy or potential enemy.

Why then does the government need to further control information of an as yet unspecified technical nature? We hope that MPs will ask the government both the why and the what of the control that it intends to establish next month.

It is probably too much to hope that the government should also explain how it intends to control this information. For, despite the high hopes of the computer industry it is unlikely that many more than a score of members of the Lords or Commons have more than the most elementary grasp of the nature of information technology — even after IT82.

Which civil servants will determine which information must travel only in sealed envelopes or by means of unbreakable codes from that which can be published freely in academic journals and newspapers which are freely available in our society to members of the Soviet diplomatic corps? According to a spokesman of the Department of Trade and Industry, the material available in *Computer Weekly* would "neither be included nor excluded" under the proposed order.

The computer industry has developed as quickly as it has through the uninhibited flow of technical information. The government must be clear about what it is doing before it quietly clears the decks to come to an agreement with the Reagan Administrations ideas on the control of trade with Communist countries.

EEC should unite

IT is 26 years since the signing of the Treaty of Rome, once hailed as a brilliant effort to get Europe to work together.

Putting aside the failures in cooperation in the traditional industries, a recent report for the European Parliament has highlighted the results of a failure of cooperation in the newest, information technology.

Japan, with an expenditure of only £250 million, has become a major power in the field of microprocessors and has captured 40% of the world market. Western Europe has spent twice as much to gain only 10% of this market.

It is a problem that the European Commission has addressed with the Esprit programme, but it is not yet clear whether this will gain the support and long term commitment that is necessary to make it a success.

It is to be hoped that the Commission and the member states will pull together this time and obtain better value for money than in the past 15 years.

1984 and all that...

THIS week's example of the strange things people say about computers was sent in by Jackie Burke of London, who wins £5. One final word of caution: it is the software that makes your hardware jump through hoops. You may have just invested an arm or leg in computer equipment, but without the software, Micro-Chief hasn't got off the ground.

Rolling Stone

LETTERS

Do take your time

IN A letter which you published about British Telecom plans for on-line directory enquiries (*Computer Weekly*, June 16), S. J. Hewitt of High-Tech Computer Systems, Nottingham, wondered about the "mathematic qualifications" of your writer, Andrew Thomas.

He then went on to postulate that "reducing the average call by 12 seconds means that the next call is answered 12 seconds sooner. This is equivalent to a 30% reduction in waiting for a call to be answered, while the staff reduction is only 25%".

In spite of my lack of "mathematic qualifications", I hope that Mr Hewitt will permit me to show that a rather less favourable outcome can be calculated.

If we assume that the queuing theory of Khinchine and Pollock applies, with random arrival times and service times, and we assume that the maximum number of operators on duty at any time is 53.3% of the total complement, presently 10,000 (Andrew Thomas' article in *Computer Weekly*, May 19, states plans for 4,000 terminals and 7,500 staff), then the maximum theoretical number of calls which could be presently answered per minute is:

$$53.3 \times 10,000 \times \frac{60}{52} = 6,150$$

(with infinite queues for service). If the number of operators is reduced to 7,500, and the average handling time is reduced from 52 seconds to 40 seconds, then the

new theoretical maximum is:

$$53.3 \times 7,500 \times \frac{60}{40} = 6,000$$

calls per minute. If we assume that, presently, the average utilisation (μ) is about 60%, the demand is for 3,690 calls per minute, then the present average queue length is:

$$\frac{\mu}{1-\mu} = \frac{0.6}{0.4} = 0.95$$

therefore the average waiting time before a call is answered is $0.95 \times 52 = 49.4$ seconds. With the proposed scheme, the average utilisation (μ) is

$$\frac{3,690}{6,000} = 0.615$$

therefore that average queue length would be

$$\frac{\mu}{1-\mu} = \frac{0.615}{0.385} = 0.992$$

or a wait of $0.992 \times 40 = 39.7$ seconds.

The reduction in waiting time is therefore 9.7 seconds (19.6%), and not the 12 seconds (30%) which Mr Hewitt postulated.

Perhaps other readers, with "mathematic qualifications" even, would care to utilise this or other queuing theory formulae to calculate the most advantageous balance between staff reductions and service improvement levels.

STANLEY MACKINTOSH
Mackintosh Mackintosh
Johnstone & Partners
Management Consultants
Harrogate HG3 1QL

Crack the cycle ride problem

HAVING just participated in the eighth London to Brighton cycle ride and seen the massive organisation (and at times disarray) in controlling the departure, regulating the flow, and anticipating arrival "peaks" at critical points, this event must surely be trying for sponsorship from the computing industry, both in a system of traffic regulation and rider registration. How about bar code armbands?

Not only would the organisers and police be able to check departures and drop-outs for forward advice to the finish, but critically sited checkpoints would be able to assess the build-up of traffic at bottlenecks and hold back riders until the peaks subsided.

Likewise British Rail would know when the rushes would occur.

So come on all you traffic modellers and rapid data capture, let's see if you can crack this one — only around 3,000 "vehicles" per hour!

DAVE HALLIDAY
Inverness

Focus on PC

I NOTED with interest the article on ADR's plans to link the IBM PC and mainframe computers with comparable software (*Computer Weekly*, July 7).

Your readers may not be aware that Focus, the leading 4GL, is already available on the IBM PC and is being delivered to users.

PC/Focus has the identical syntax to mainframe Focus and thus can be used for developing mainframe applications; stand alone PC applications; analysing data transferred from the mainframe to the PC; and sending data to the mainframe from the PC.

P. R. SCARWEN
Managing Director
Information Builders (UK)
Wembley HA9 6EB

Dastardly plot

ON THE Innos secrecy business, if Dick Barton needs to be told (*Letters, Computer Weekly*, July 7) then what hope for us ordinary mortals?

I can only hope that the old team will be back together protecting us from what appears to be some dastardly plot to ruin the chances of us ever having a seismic industry! What about some questions in the House?

PETER MINTON

Whitehurst Reading

The true facts of MVS

YOUR article headed "ICL delivers VME — at last" (*Computer Weekly*, June 30) contains numerous inaccurate and gratuitously disparaging references to IBM's MVS operating systems.

You say an MVS user needs 15 systems programmers to maintain the systems. Not so. There are large installations with support staffs of that size, but they are rare, and only a small number of staff will be employed on MVS.

For an average system our customers employ three or four. Even those may not be engaged on MVS full time, but would also probably be working on network and on-line database systems. Indeed, some customers have a single system programmer for their MVS system.

You say that "conversion" to MVS/XA takes two years. Not so. MVS programs that obey the documented standards need no modifications to run under XA.

Installation of XA is like a typical operating system release change (for example, MVS/SP 1.1 in MVS/SP 1.3). This takes our customers not two years but typically under six months. As for

IBM Portmuth Hampshire.

MicroAPL claims the first

I AM sure many of your readers will be as surprised as I was to see your announcement in *Software File* (*Computer Weekly*, July 7) that 16-bit versions of APL are "on the way" and will be available "by autumn".

Your headline would have been more appropriate back in July 1981, when MicroAPL announced the world's first 16-bit micro running APL, using the very powerful Motorola 68000 processor.

To put the record straight: MicroAPL has been selling 16-bit APL systems very successfully for two years.

MicroAPL London SW8.

programming effort, not 10 man-years but less than 10 man-months is the typical figure.

You say a user needs two 308Xs, one for production, the other for conversion. Not so. No conversion is involved: existing programs continue to run on the same machine whilst XA is installed. MVS/370 and MVS/XA can run on the same machine using the VM/XA migration aid.

You say that a DOS/VSE user needs five systems programmers. Not so. Again only one to two people are needed for an average installation using mostly IBM software.

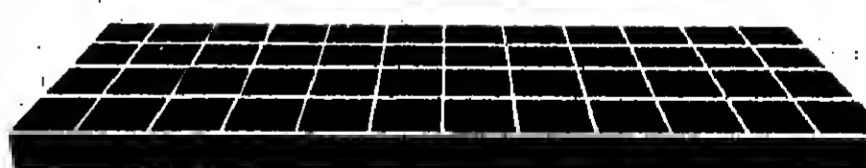
User reaction to the MVS/XA software, discussed at the recent SHARE and GUIDE user conferences, has been very favourable. The views you have printed have not been reflected in any of the early customer installations.

These errors could have been avoided if you had checked your facts with us before publication.

A. B. CLEAVER
Assistant General Manager
IBM

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Liveware
File

by Don

I'VE DEVELOPED AN AUTOMATED...



GOLF CADDY WHICH DOES AWAY...



WITH ALL THAT TRADITIONAL GUESSWORK...



BUT SO FAR IT ONLY TELLS ME WHAT I SHOULD HAVE PLAYED!



WORKPLACE



Milton Keynes is the location for Europe's first Energy Park.

Profit from fuel cuts in first Energy Park

by Philip Hunter
A RICH seam of opportunities for computer and communications companies will emerge later this year when work begins on Europe's first Energy Park in Milton Keynes.

The Park, which will include private houses, factories, warehouses, schools and community centres, will also provide attractive sites to makers and users of computers that use a lot of electricity. The aim is to cut fuel bills for private houses and business premises by good thermal design of

buildings, and by management. The Electricity Board will be involved in the project with computerised remote meter reading. By offering variable hourly charge rate based on rate of consumption, the board will, in theory, be able to control use of electricity to optimise both its own production and reduce customers' bills. But planning director John Walker insists that private users will only have the Electricity Board on the 'phone telling them to turn off their fridges for an hour if they wish it.

Communications will also feature prominently in the project, and there will be links with the existing IT initiative in the town. The Energy Park will be one of the first to be linked to the private Mercury Network mined mainly at business users who want high speed communications. Already 20,000 homes in Milton Keynes are served by British Telecom's co-axial cable network, and this will be extended to the new Energy Park. Milton Keynes is also a test bed for local area networks.

PUZZLER



IN the above diagram, separate points have been in such a way as to form lines of three. This week's problem is to find two points only in such a way that the new configuration has lines of three instead. See page 55 for the solution to the problem.

CONSULTANT'S CASEBOOK

SYSTEMS planning studies can be fraught with hidden difficulties and pitfalls. The failure of an over-ambitious information systems plan can be disastrous, both to the data processing department involved and the company which it serves.

We were called in by the chief executive of a multinational electrical goods company, following the collapse and cancellation of its five-year DP plan. The chief executive acted as chairman of the company's Information Systems Control Group, which had been set up to monitor and control major new computer and systems developments.

Work on the five-year strategy had been cancelled less than a year after the start of development work.

This was the result of rapidly escalating cost estimates on almost every aspect of the development process, coupled with a lack of tangible results in management's eyes, and dwindling commitment to the benefits originally foreseen.

Needless to say, the DP function was in complete disarray and confusion. Morale had sunk to a low ebb, with everyone looking over his shoulder expecting the axe.

The cost of cancellation had so far been calculated at more than £400,000, made up of the costs of buying several major software packages and the wasted manpower effort to date.

As for the company's management, it was thoroughly disenchanted with the entire process of computer system development and was wondering where on earth it had gone wrong.

It was still, however, committed to changing and extending the present system set up. But not at any cost!

The company was the European arm of a Canadian giant, which had been operating in Europe for the past 25 years and was allowed

The company believed that the two-year payout would represent a fair investment

considerable freedom by its parent.

The company agreed cash flow, revenue, profit and investment targets with Canadian management, and was thereafter permitted to run an operation to suit local European conditions and markets.

It had extensive manufacturing and marketing networks throughout Europe, was headquartered in London and had become a profitable decentralised operation based in six countries.

However, the company had retained a central mainframe concept for each of the subsidiaries, as originally set up in the early 1960s. Each operation ran a medium-scale Burroughs mainframe; feeding, and being fed, every month-end by the London HQ installation on a disk-up basis.

Over the years, a whole host of minis and micros had also grown up in each country. The costs of running and maintaining this

Disaster can follow a failed information systems plan

Tower of Babel had escalated and were running out of control. Also, the company had become concerned that it was falling behind its major competitors in terms of its production control techniques and its marketing information systems.

Cosmetic or minor surgery was no longer appropriate for sorting out the situation, and a major review of information systems was commissioned by the group.

The company had examined a number of strategic system planning techniques, marketed for the most part by hardware manufacturers. It decided not to use any of them, fearing (rightly or wrongly) bias on the part of the manufacturers.

So it turned to the London HQ's computer department, which had maintained a fine reputation as a solid and credible workforce of DP professionals; they were entrusted with performing the major information systems planning exercise on behalf of Europe as a whole.

The study took nine months to conduct. Interviews took place within the entire European management structure; visits were made to the Toronto headquarters of the parent company; and various alternative mainframe and software options evaluated.

The systems plan that emerged recommended the installation of a further five, medium-scale satellite installations at the company's manufacturing sites in Lyons, Rotterdam, Milan, Frankfurt and Uppsala, linked to the country marketing head offices at Paris, The Hague, Rome, Frankfurt and Stockholm. This entire network would be linked in a star centred on London.

The London installation would upgrade temporarily to handle the foreseen development phase.

The individual DP departments located at the country headquarters would provide the staffs to manage the new satellite manufacturing sites.

The development of a number of standard and portable systems was foreseen for Europe as a whole. The systems plan would extend into late 1988. By this time, it was expected that much of the mini and micro work would be mapped up and transferred to the mainframe.

Three major systems development areas were visualised, relating to standardised upgrades in the production and inventory control systems, marketing, management information systems, and a new general ledger and financial reporting system.

Implicit to all of this was a major upgrade in the telecommunications capability of the company, and the introduction of database technology for the first time. Annual benefits totalling £4 mil-

lion were expected from the implementation of the plan, through the more efficient use of plant, increased marketing profitability and interest savings on working capital reductions.

The total cost of the plan originally stood at £7.5 million, which included the one-time purchase of new equipment and leased

John Simpson continues his occasional series

lines, the purchase of software and the five-year manpower development effort.

The company believed that the two-year payout from the end of implementation would represent a very fair investment in preparing itself with systems to match the challenge of the late 1980s and the 1990s.

However, less than a year later, hardware costs had increased by 20%, system conversion costs had escalated by an alarming 150%, systems developments had risen by £700,000 and the cost foundation of the systems plan was beginning to look very shaky indeed!

The benefits originally foreseen

computer department had sent a number of people to our systems analysis and design courses in the past.

Whilst this seemed a very tenuous reason for approaching us to perform a study on its behalf, it became clear that this was by no means an isolated example of the DP department's decision-making rationale.

Our initial assignment was to prepare a report, on behalf of the Information Systems Control Group, unravelling the situation to date. It was to point out the major reasons for project and cost overruns and outline an approach for future development and progress.

We spent five weeks untying an intricate ball of string and a further four weeks organising our findings and preparing a report.

The long and short of it was that the company had simply bitten off more than it could chew. Too many changes in too many areas had been proposed, with too few experienced staff undertaking the essential development assignments.

No real commitment existed from user management, either in terms of financial benefits foreseen or for assignment of user resources

The DP people had viewed the development on a monolithic basis. The hardware, software, telecommunications and systems developments all unravelled together into one large and intricate development process.

The user would see nothing for 18 months and it had proved impossible to maintain management's interest over this period.

No one in the existing DP organisation was skilled in putting together (or costing) such a complex plan. As a result, cost and time overruns were unavoidable and user management disenchantment inevitable.

Our report first and foremost pointed out that there was no quick and easy panacea to the company's problems.

Whilst it was clear that equipment and system upgrades might indeed be relevant to the European operation, a properly managed and systematically-based approach to planning would have to be undertaken. Many of the interviewees conducted, and many of the resultant findings were usable as a basis to a proper systems study.

We offered a structured and disciplined approach to the formulation of information system strategies, based on the prevailing and

standard software approach adopted for production inventory control, given differing states of evolution at various manufacturing plants across Europe. Our planning methodology, that had to be flexible enough to satisfy differences in spread, requirement as and when necessary.

We recommended that the emanating from the study be given priority to the activities performed in a more realistic manner. We suggested that having the company's hardware as the first step, followed by implementation of the new systems areas.

Management, we said, expected to see tangible results within its month period.

An education and awareness

No one in the existing DP organisation was skilled in putting together or costing such a complex plan

programmatic would have to be designed for user management to ensure that the process of development, and the impact of changes for the company, identified and understood.

Without this understanding, user management throughout the company, and without support from the lowest management level, no matter how technically astute, would be doomed to failure.

Perhaps our most basic recommendation concerned the existing function itself. It had to be upgraded with the necessary personnel to enable it to perform both in the initial planning and resultant development phases. This upgrade had to extend to the management level down.

The company commitment to lead the information exercise, we had recommended. The study took six months to perform (that's another story), and recommended a series of planned and controllable developments for the European operation.

Now, 12 months into the plan, the company has agreed its hardware acquisition programme and is more or less through rationalising its micro applications.

Database software has been purchased and installed, and data dictionary work commenced. Above all else, perhaps, the function is blossoming into an establishment of an operational, soundly-based and practical DP department.

The DP department in Europe have been expanded, trained in the skills and necessary for the system's systems plan.

User management is now identifying a ready market, but few users prepared to bundle the lot up into a single system.

So, for example, word processing has gone from strength to operation.

THE AUTOMATED OFFICE

The people who have made the office of the present

John Lamb on how the paperless office became the electronic office, the office of the future, then the automated office

FIRST there was the paperless office, then the electronic office, followed by the office of the future and finally the automated office.

Over the past five years or so each annual round of conferences has brought a new buzzword for the idea of giving office workers a bit more than typewriters, memo pads and filing cabinets.

Despite the ever-changing catch-phrases, one would be hard put to find the kind of all-embracing "electrification" of white collar workers that the Joe Lyons company had in mind in the 50s when it chose to call its first computer system the Lyons Electronic Office.

This is puzzling, because back in the late seventies manufacturers like IBM, Wang, Prime and Sperry were for ever trumpeting some new system that combined electronic mail with word processing, telex and some kind of electronic file store.

No presentation of these products was complete without the dreaded slide which compared the capital investment per production worker with the miserly amount spent on each of his colleagues behind a desk. You do not see these slides any more.

Nor has there been a repeat of the brave attempt by Booz, Allen, Hamilton to record exactly what goes on in an office. This American research firm produced a weighty tome that set out to record such things as the amount of time workers spent trying to get through on the 'phone, the amount of time they spent in meetings, the hours they devoted to reports and correspondents.

Most important was thinking time, because this was when senior office members did what they were paid for: made decisions. Speed up the human drum stuff, so the argument went, and you gave the decision maker more thinking time to mull over those instantly available reports and company data.

It was not quite turned out like that. In fact one can trace in the changing catch phrases a growing realisation that there was a lot more to office productivity than slipping up the floorboards and wiring to a whole lot of terminals.

First there is no way that anyone was going to do away with paper. Cut it down perhaps, but not abolish it. Second, it is a brave manufacturer who proposed some all-encompassing office system, although there has been some resurgence of this idea with the arrival of local area networks.

Interestingly enough earlier notions that customers were going to buy all the gear to hang on these networks from a single source have been replaced by an emphasis on standards which enable users to mix and match.

The best phrase of all, perhaps, is office of the future, because unwittingly this is exactly that: something for the future, rather than something that can be usefully employed now.

That is not to say that office automation has failed. It is proceeding apace, but in piecemeal rather than a concerted fashion. What we have seen is individual elements of office automation finding a ready market, but few users prepared to bundle the lot up into a single system.

So, for example, word processing has gone from strength to operation.

Personal computers have driven the price of converting from electric typewriters to word processing down to a point where there is not much in it. Word processing has clear advantages over conventional typing: it is not only quicker, but can produce higher quality correspondence.

Viewdata, on the other hand, has had mixed fortunes. First it was marketed to business as an integral information system, a means of relaying messages and broadcasting company data. It is only in the last couple of years that the idea that the technology can be more usefully employed as a cheap means of transaction processing has caught on. In other words that viewdata can be used to enter orders, inspect stock levels and so on.

Office automation has not failed. It is proceeding apace, but in piecemeal rather than a concerted fashion

The differing fortunes of these two techniques of office automation underlines the fact that the whole field is being driven by manufacturers rather than by user demand. And it is a hit and miss affair. When suppliers produce a product that is a straight replacement for a well understood aspect of office life, that is fine. When they try to foist a novel idea on their public they must take their chances.

What customers want to see is some straightforward financial benefit from their investment. Digital PBXs make sense because facilities like re-routing and automatic dialling speed telephone calls, while the surveillance programs which enable companies to block calls and monitor individual extensions helps them cut down on calls. Saving of up to 20% on telephone bills are claimed for call monitoring.

But, what about the more advanced PBXs which can handle data as well? Where do they fit in? customers ask themselves. These "superswitches" raise questions about whether an organisation needs terminals or employees' desks whether transmission rates are high enough for the business in hand and how a different method of moving data around will fit in with an existing computer set-up.

Recent jostlings between computer companies and telecommunications firms, IBM's dropping of the Miel PBX, for example, underline the difficulty that manufacturers themselves have in integrating computers with voice. The two sides have a tendency to collide when they reach out for some middle ground between the two technologies.

Meanwhile, larger users, have tended to hide their time so far as office automation is concerned — only investing when there is a clear benefit for a particular department or type of office worker, but testing the temperature with pilot trials of more advanced techniques.

At BP, for instance, head office managers have an impressive information system which enables

them to keep up-to-date on operations in major BP companies.

But the man in charge of this Natural Resources System (NRS), is adamant that it is not necessarily the precursor to some kind of management workstation. "We only invest when we have satisfied ourselves that there is a cost benefit to be gained from office automation," he said.

One of the big stumbling blocks in the advance of office automation is this question of measuring its effectiveness. It is relatively easy to record the number of letters that a typist produces each day, or the cost of sending letters by post or special messengers. But it is more difficult to make a case for the benefits of improved information flow or the advantages of mailbox system.

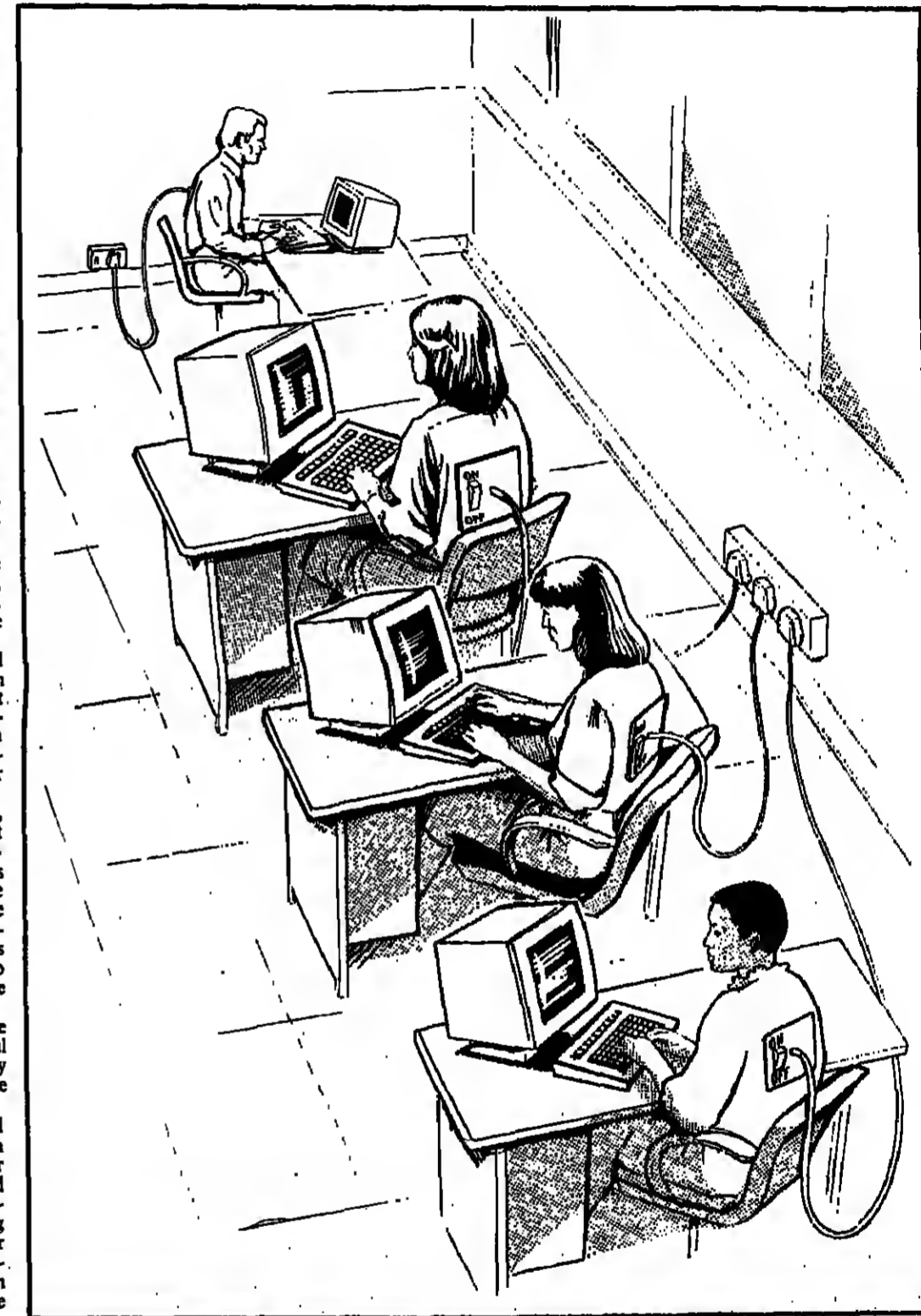
Such questions are not helped by the disagreements between manufacturers about the best way of doing things. The computer firms advocate local area networks with all the intelligence at the workstation or attached device, while communications firms say it should be in the PABX because this avoids rewiring.

Again, do users buy a personal computer for a specific job with the intention of upgrading it to fit in with some wider office automation scheme, or do they wait for a centrally organised scheme integrated with the company's larger computers?

In certain types of company, office automation has to be set against what could be called customer automation. In other words investing in systems which remove the need for office staff, because the customer does his own administration. The classic example is automated teller networks. No office staff are involved in these transactions.

These automated services are not just confined to the financial world. Travel agencies routinely book holidays and flights on the say so of a computer.

Much office automation has had little to do with large organisation anyway. The personal computer has been eagerly adopted by small businesses to speed up and improve clerical work. While the big boys have been scratching their heads over networks and ergonomics, their small cousins have been equipping themselves with the office of the present.



The electronic dream?

THE AUTOMATED OFFICE

Integrated office automation sounds wonderful – but how does it work in practice? Martha Turinas describes it

The system that is more than the sum of all its parts

INTEGRATED OFFICE automation is more than the sum of its parts – computing, telecommunications and information handling in various forms. For the supplier it is a completely new market; for the user it is a completely new experience.

The implementation record of the early integrated systems has shown that there can be big problems in converting the theoretical benefits of the equipment into everyday practice.

For both suppliers and users, integrated office automation is a far cry from the familiar practices of data processing and the use of conventional office equipment supply.

In data processing the environment is controlled and the well-specified tasks are handled by in-

For both suppliers and users, integrated office automation is a far cry from the familiar practices of data processing and the use of conventional office equipment supply



house experts in the technology. In office automation working methods are unstructured and everyone, from the managing director to the most junior clerk, may be asked to change the way they work and communicate.

One problem may be in the wide range of facilities that are provided. In an integrated office system, users may have access to word processing, electronic mail, electronic filing and retrieval, administrative services (such as a personal directory, message recording, personal diary, calculation, meeting scheduling), personal computing, corporate data processing, voice messages, telecommunications, local office processing and outside databases.

Having all these facilities in a single desktop workstation is, of course, the key benefit of office automation offers. But it is not easy to design and implement a system with guaranteed success because the office environment is not controlled and because different people will use their terminals in different ways, reacting to events, decisions and changing circumstances in the unpredictable pattern that typifies office work.

Hence the value to users of continued consultancy support as they strive to get the most out of their integrated systems. This support

can come from general consultants or from the system supplier, where the supplying company's knowledge of its equipment plays an important role in maximising its effectiveness in use.

In approaching office automation, most user organisations will start with a pilot project of some type, with the general intention of gradually expanding its applications throughout the organisation. The pilot department or area should be chosen with care. It should be large enough to have the necessary "critical mass" to make electronic communications worthwhile, and it should have reasonably high visibility within the organisation.

Suitable candidates might be a marketing department or a personnel department, where much of the work is event-driven and unstructured and where there is a lot of communication.

Identifying a suitable pilot project will normally be a part of the planning and feasibility assessment that precedes the acquisition of equipment. Other aspects of the introduction of the new system should also be covered at that stage, usually in conjunction with the supplier. But, all too often, while overall strategy may be clear, the many details involved in effective implementation are overlooked or left until later.

Education is one of the most crucial aspects. There is a tendency to assume that, after a short session of instruction on how to use the workstation, all will be well. It is general practice for users to be given, say, two days' training on the equipment and they are then expected to get back to work more or less as normal. This ignores the fact that what is involved is a totally new way of working.

Experience has shown that this applies to all sizes of organisation, from a small market research company, for example, to the head office of a major retail company. They are all learning that to introduce integrated office systems involves much more than simply replacing the old with the new and hoping for the best.

The introduction of an integrated system can involve some very basic thinking. It is feasible, for instance, for an organisation to automate the processing of forms using the new electronic system. The whole process of calculating, submitting, checking, approving and paying expense claims, as one example, could be handled easily by the system – but how would this affect existing authorisation procedures?

In other words, the user organisation must accept the responsibility for carefully assessing not simply whether the proposed new office system can do particular tasks, but, more importantly, whether the system should do them; and what procedural changes will have to be made to accomplish the task in the most practical way. It may seem an obvious point to make but these implications are often overlooked.

In terms of the use of the equipment, a common mistake is to fail to control the way the system is used – to adopt standard procedures for such things as indexing and access to shared databases and other shared files. People tend to think that as soon as they are linked to a computer they have an electronic blank slate in which they can store anything, and everything, without limits.

The confusion that can follow the proliferation of individual



For the user, integrated office automation involves more than just keyboards.

floppy discs is all too real.

The setting up of agreed "house style" for what is to be stored, and how, and for how long, and how appropriate access for authorised persons is to be determined and maintained is all very basic, very detailed – and very important for success.

Thus an integrated office system will bring new ways of working, plus many potential benefits but there are many pitfalls to avoid, and a need to impose some structure on an essentially unstructured set of activities. Giving people the new workstations on their desks is not enough. Who will ensure that there is no conflict between individual needs and those of the organisation? Or that all the boring but essential details are covered?

At senior management level the overall approach to integrated office automation will involve three people directly – the data processing manager, the telecommunications manager and the office manager. At the very least their views must be in line.

Arguably, in the long term, only those organisations which bring these three disciplines together under one person will succeed with an integrated system.

But the real key to success in implementing integrated office systems will lie in the choice of person for the detailed co-ordin-

ation role – the supervisor or system administrator. The task is to manage the system and ensure that both individual users and the organisation get maximum benefit from it.

Working with the individual users of the system, the supervisor will need technical knowledge, the skills of a diplomat and a salesman, appropriate authority, a talent to attend to detail, good personal skills, an ability to develop controls and procedures, tact and understanding. He or she will need to take a business view. It is an exacting job specification, for it is a crucial job.

Against this background, the consultant can aid the user organisation in a number of specific ways, starting before the system is

cluding phasing, parallel running, layout and ergonomic aspects; training, including general seminars and tailored in-house briefings; and post-implementation "nursing" to ensure that the equipment is used to its full capacity.

In general, the basic capabilities of an integrated system, will be tailored by the user organisation to meet its own requirements, and the organisation will write its own procedures manual. The consultant can develop guidelines for this, and generally can help to ensure that the organisation is putting in the procedures and controls and is educating the people who will use the system. To achieve this the consultant must work closely with the supervisor.

In general, the basic capabilities of an integrated system will be tailored by the user organisation to meet its own requirements, and the organisation will write its own procedures manual.

chosen but extending throughout the implementation phase. The consultant can provide assistance and guidance to in-house office automation teams in such areas as cost-justification, choice of pilot site, and user involvement in planning and implementation, in-

cluding phasing, parallel running, layout and ergonomic aspects; training, including general seminars and tailored in-house briefings; and post-implementation "nursing" to ensure that the equipment is used to its full capacity.

There is no magic wand that can be waved to produce an instantly integrated, automated office. But there are a number of golden rules, starting with the initial essentials of top management commitment and user involvement at all stages. The real needs must be iden-

THE AUTOMATED OFFICE



Roger Winder describes what he believes is the central office automation denominator

Word processing is the common office factor

IF MARKET surveys are to be believed, 98% of the companies in Europe will be running word processing applications by 1990, compared with 42% now. Word processing has proved itself the common denominator between different organisations moving towards office automation and, as such, is rapidly assuming a central role in development.

No longer is it a substitute for a typewriter and merely a means for producing bluish-grey letters: the purchase of a word processor has much more profound implications throughout a company, with emphasis on the DP department.

The office of the future has to be designed with flexibility in mind, to adapt to changing circumstances or technological developments. This means that the roles of different applications will have to overlap to a small degree, with emphasis placed on the integration of the whole concept.

Integration must be achieved at three levels, from the combination of several functions within one workstation to a ready interchange of communications between workstations or other equipment. The most important level, however, is that of data so that information from any source is in a suitable format for use in any other function.

Within secretarial or clerical environments there is often a need, for example, while typing a report to refer to outside information which may be held on a database. To handle this situation efficiently, the word processor workstation must be capable of performing more than one interactive task simultaneously, although the majority of computer operating systems are incapable of achieving this at the moment.

One of the dilemmas facing corporate users is whether to go for uniformity and install micros compatible with a mainframe and a word processing package, or opt for dedicated stand-alone word processors. Local authorities appear to be plumping for the latter course of action. Renowned for their ability to generate paperwork, over 60% of boroughs now have word processors, accord-

ing to the latest LAMSAC figures, and about 2,000 word processor operators are on the national payroll.

The London Borough of Merton, which has a staff of 7,000 administering an area of 9,380 acres, has a clearly defined strategy. "Our policy is that, where an application involves predominantly word processing or text manipulation, such as conveying or agendas, we recommend dedicated word processing machines," said Jim Frankland, head of management services. "Where the balance lies in data manipulation we have recommended ICL DRS 20 micros."

The reasoning behind this is based on comparison of quality of products, and ease of use, having experienced both sides of the coin.

"Standard software packages are not of the same quality as dedicated word processors for text manipulation, both in the number of functions and in the standard of the screen," explained William McKee, chief executive at Merton.

At Merton, the motive for installing word processing equipment – a cluster of four terminals linked into a Wordplex System 7 shared logic CPU, plus two stand-alone 80/3 systems – was to save money, and this has been achieved.

One of the largest individual savings was on the production of council minutes. In the hands of outside private contractors, the job had previously cost £14,000 a year, involving compiling an 80-page book six times a year, with 400 copies for distribution each time. Using in-house word processing staff, the cost was halved to £7,000 a year.

Further improvements in efficiency have been made through holding basic standard documents on file, such as legal documents, leases and other documents involved in council house sales. These only need minor amendments before a complete new personalised document can be issued, and a register of the borough's 162,000 residents is held to facilitate this.

The need to store complex documents for periodic updating and

re-issue is one common to many organisations. Probably few of the 14 million customers who shop at Marks and Spencer each week realise what a large part word processing plays in their choice of goods.

Since 1976 when the first stand-alone system was installed as an experiment, Marks and Spencer has built up a word processing unit with 12 terminals connected to a Wordplex System 7, and other stand-alone systems for directors' use. About 60% of processing time is devoted to re-vamping program specifications for the DP department, but a further significant proportion is spent on preparation

of checking list summaries.

A checking list summary is a detailed stock and sales report compiled from details of selling prices, stock-in-hand and stock-on-order sent in by the 260 UK stores. Each department of the store completes a list, which may run to five A3 pages for a food section, or up to nine for textiles, on a weekly and fortnightly basis respectively.

Once individual lists have been analysed and combined on Marks and Spencer's ICL 2966 mainframe system, a basic checking list is generated for amendment by the statistical services department. This department adds any local

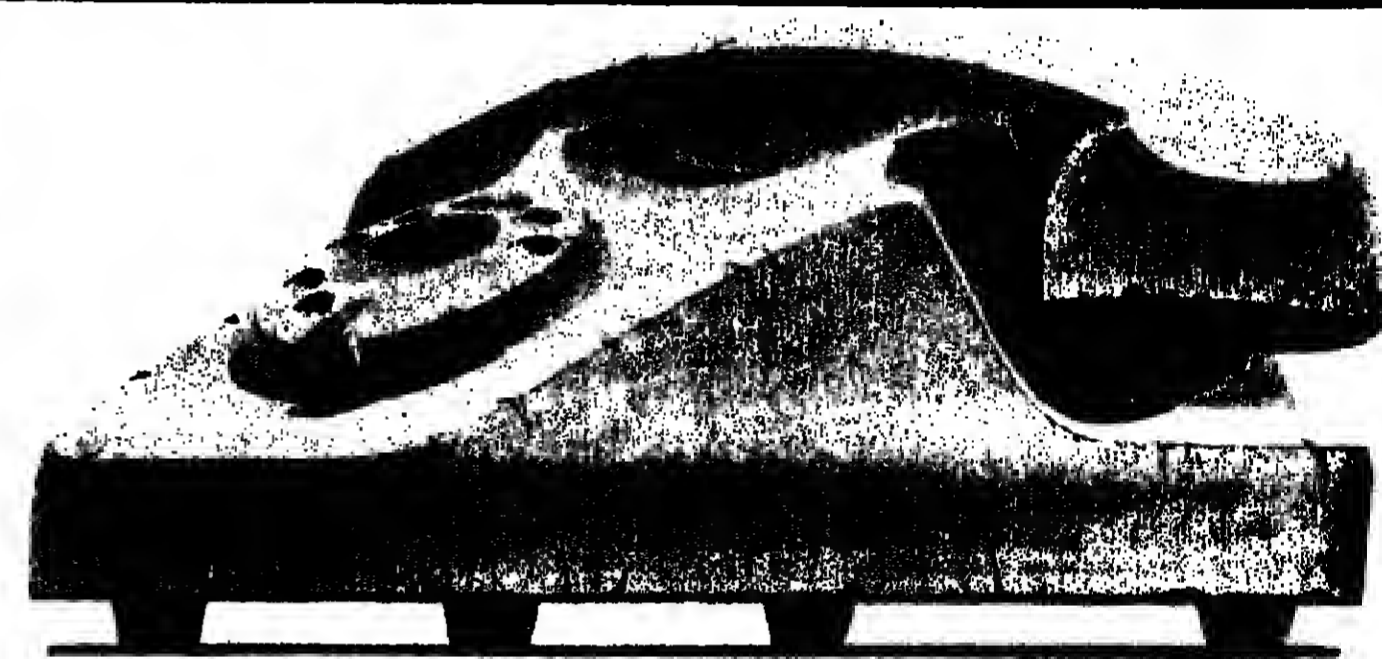
information or national statistics which might affect the coming eight-week period.

A final checking list summary is produced by the secretarial services department; a job which occupies two screens full-time for a week, but which has reduced the amount of time spent on each document from 65 minutes to 37 minutes. Once completed, the checking list summaries are sent to food and textile departments to form the basis upon which they will order new goods, or adjust sales of existing ones.

Marks and Spencer is anxious only to use technology where it benefits the company, but this has

not prevented the company (which had a turnover of £2,505 million for 1983) from being a great innovator of new working methods. Acting upon a philosophy of capturing keystrokes only once, it is pioneering use of an OCR (optical character recognition) machine to input draft documents to a word processor.

Having standardised on the Courier 10 typeface for all its typewriters, Marks and Spencer has now invested in a Mitsui OCR document reader so that paperwork produced on any typewriter in the company may be fed direct in the word processor CPU for manipulation later.



It's 1983. Has anyone told your telephone?

Your telephone is so much a part of your business that it's very unlikely you've stopped to consider it.

And chances are your telephone system is operating in much the same way as business telephones have for twenty years.

So you may not be aware of just what a modern system could do for you.

We're Thorn Ericsson. One of the market leaders in communications.

We make and sell a range of business telephone communications systems that use the very latest technology. From relatively small units with ten lines or less to massive 12,500 line exchanges capable of handling speech and data simultaneously at ultra high speed.

They have one thing in common.

They all add value.

So much so that they will pay for themselves very quickly indeed. In greater efficiency. And substantial savings on your phone bill.

You'll find a superb example in our Diavox 824 System. An electronic office communication system that brings the latest in business efficiency to the smaller company.

You can use Diavox 824 as a straightforward operator-controlled system.

As a key system with no operator. As an executive/secretary system. As a call distribution system. Even a combination of these.

If you are considering an office move, the need to discuss a new telephone system is obvious.

We believe, however, we can show every business how our telephone systems can make a positive difference to the way it works.

One that can be measured in £s.

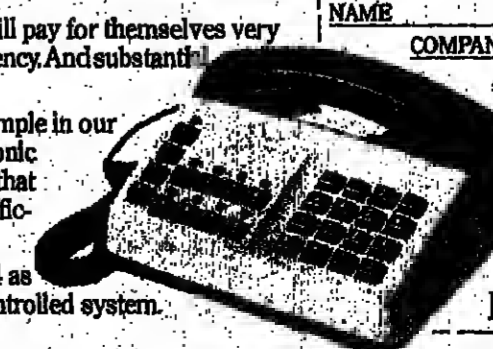
The coupon is the first step.

To: THORN ERICSSON Ltd, Viding House, Foundry Lane, Horsham, West Sussex RH13 5QR. Please tell me more about the 12 line 24 Extension Diavox 824 System ☐ Internal Direct Speech Intercom Systems ☐ Larger PABX Systems ☐ Staff Location Systems ☐

NAME _____ COMPANY _____ ADDRESS _____

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THORN ERICSSON Partners in Communication.



Now Marks and Spencer shoppers realise how much the store depends on word processing.



How many files can you allow a secretary to access?

The Key Specialist Event in the Computer Year

Sponsored jointly by the Peripherals Suppliers Association and 'Systems International', Peripherals '84 has justifiably been named the *only* specialist show for computer professionals.

Through a massive publicity campaign using all the key systems development publications, Peripherals '84 will attract a record number of visitors from purchasing/specifier sectors of this continually expanding market. Attendance in 1983 was up 25 per cent on 1982. And 1984 is all set to be the biggest and most successful to date.

This is the buyer/specifier confrontation of the year. Don't miss it.

How to Book Your Stand

This is the key specialist event in the Computer Year - ACT NOW - for further information telephone Ian Hardman, Sales Manager on 01-661-3022.

PSA members are eligible for a preferential stand rate. If you are not already a member and would like to know more about the association's aims and objectives phone Mr Michael Perry on 0908 668118. Provided you become a member before the opening of Peripherals '84 you can claim the special members rate.

For more information return this coupon to Ian Hardman, Peripherals '84, Room L216, Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS.

Name

Position in Company

Company

Address

Tel:

How Scrapbook found some 18th century art

The United Trading Group found more than it bargained for when it modernised its Queen Anne office

FROM its restored Queen Anne mansion at Fetcham Park, Surrey, the United Trading Group (UTG) controls a network of subsidiaries, associate companies and representatives in 23 countries.

Because its traditional mainstay has always been trading, with operations ranging across a wide spectrum of commodities, the group has to have some way of controlling and organising the massive data flows these operations generate.

The problem was posed, around four years ago, before the group moved to Fetcham Park. "The UTG Board decided it had to find some form of centralised filing system," explained Eddie Board, group computer projects manager.

At that time Board was a consultant with a software house that had

done work for UTG several times in the past. Once the UTG Board had decided to look into the issue of a centralised filing system, it set up a working party and asked the software house to draw up the specifications for a computerised "electronic office" approach to the problem. Board emphasised that this was just one option alongside a number of different options looked at by the UTG working party.

When his report was completed, the working party sent the specifications to a number of computer companies and asked them to tender for the contract, in order to get a more accurate sense of the potential costs of this solution.

Among the companies who expressed interest was Systime, who wrote back to UTG telling it about

a database/text filing package called Scrapbook, marketed by Triad Computing Systems.

As a result, the UTG Group accountant and the company secretary, together with several UTG executives went to a user presentation staged by Systime. The demonstration convinced the working party and it subsequently bought Scrapbook and a Systime 6700 minicomputer (based on the DEC PDP 11/70) with a one megabyte processor.

The contract for the package and the hardware was signed in early 1979. UTG had just completed negotiations for what was to become UTG House at Fetcham Park and expected to be able to move in within six months. Board had decided to resign his post as consultant with the software house and approached UTG. "I'd had no knowledge of what they had decided to do with my report, but when they heard I was free they offered me a job overseeing and installing Scrapbook. I was delighted to accept," he said.

But Board and the UTG working party soon found they were in for a longer wait than they'd anticipated before Scrapbook could go live. The problem was the Queen Anne mansion. As the last work of the 17th century architect William Talman, it was already a listed building. During the course of restoration work, builders removing hardboard panelling from the walls around the main staircase uncovered extensive murals by the early 18th century painter Louis Laguerre.

"The group had no choice - once the murals had been found the logical thing to do was to restore them, and that took more time than anybody had bargained for," said Board.

Fortunately UTG was able to find a suitable room for the hardware to be lodged, temporarily, in one of its warehouses in Epsom. According to Board, the delay, although irritating, turned out to be a hidden benefit. It gave him and a small team of programmers an extended developmental period with the package, which they put to good use.

The major objective the package had to meet was to serve as a centralised filing system, capable of being accessed by everyone from the typing pool secretaries to the managing director. Inevitably, when a database with confidential information is being accessed by a number of staff, a password system has to be set up.

The delay gave Board time to ensure that when UTG House was ready for the group to move in, every room and office on the premises was wired for a VDU.

A total of 30 VDUs were installed, with 12 having a daisy-wheel quality printer attached to turn them into word processing and text entry workstations. The Systime minicomputer gives the group around 180 megabytes of online storage, enough room for everyone in the building to put what they like into the computer.

The real development work carried out by UTG during the two and a half year delay while they waited for the builders and restorers to finish, was concerned with the communications facilities of Scrapbook. The UTG principals are Jordanian and the group has extensive interests throughout the Middle East.

Much of its trade is carried far from the UK, and as a consequence, UTG has for many years now made extensive use of telex and telecommunications. Scrapbook looked like an ideal device for capturing all the communica-

tions data flowing through the company Park premises.

In consultation with the group, which was keen to develop its communications side, the package, Board modified the package to allow all incoming and outgoing telexes to pass through Scrapbook. As the system now exists, any telex at any terminal can go direct to telex, with the full word processing facilities for editing the telex.

In addition to communicating all the paperwork that the business normally generates, from sales documents, to draft contracts, memos and reports, it produces using Scrapbook. Unlike many other systems, the electronic office Board does not put much value on the idea of a paperless office, as the aim has been to use Scrapbook to generate any necessary paperwork rather than to use it to replace paper.

His view is that paper will always be a part of office life. "I can't pick a terminal up and take it down to the pub to browse over during lunch," he said. "And an executive can find himself at a

"You can't pick a terminal up and take it to the pub to browse over at lunch"



off for Egypt at a few hours' notice. It's important to be able to take the paper file on the task computer with you, to read on the spot.

The design of Scrapbook was that everything can be subject heading, and subject heading, a large subject can be opened.

From that moment, everything that was done on that project, would find its way into a hierarchical file on Scrapbook. The design of Scrapbook was that everything can be subject heading, and subject heading, a large subject can be opened.

Board explained that what file has been created, with various subsystems, it is possible to restrict the access of various levels of the organisation.

"You could allow access to only a heading references inside the file, within the allowable further distinctions. Read only and Read and the two extremes, and then there is a further which allows the Read and Print, but not to or over the information on the (the 'Lock' command).

Suit the office to human occupants

For the best results, office automation should be considered from the viewpoint of everyone it affects, writes Reg Broughton

EACH year increasing numbers of large corporations in Europe and the UK are making major investments in office automation equipment. These investments are made to provide a number of benefits, including increased worker productivity, more cost-effective operation, improved cash flows, and the rapid availability of accurate information storage and retrieval in the forms of words, numbers, images and voice.

The return on the office automa-

tions are not adequately prepared to take maximum advantage of all of the opportunities that office automation can offer.

Sometimes, when inadequately prepared organisations attempt to plan and manage their own installations, they take considerable risks with their future. For example, a poorly managed installation may soon be regarded by employees as a source of confusion, irritation, and a waste of time and money.

work, they tend to blame the people who bought it, the equipment itself and the equipment vendor.

In some instances, the quality of office automation management has been so poor that severe organisational problems have resulted, including the sabotage of expensive equipment, and strikes.

When inexperienced organisations attempt to implement an office automation plan, whether from a consultant or vendor, or

tion, corporate goals and objectives, workflow and procedures, manpower planning, communication patterns, lines of authority and responsibility, activity scheduling, and market and sales forecasting. In addition, office automation has an impact on morale and issues such as job security and confidence, and attitudes and beliefs about the corporate social and political system.

Until now, no manufacturer has developed a standalone product that can help its customer to integrate office automation technology into its own organisation. And few manufacturers have developed a systematic procedure for planning, implementing and monitoring an office automation installation that reflects consideration for the total organisation - its environment, its people and how they get their work done, and the company's products and services.

Wang is developing a "Human Factors Programme" with the aim of providing a customer-based, customer-driven, systematic procedure designed to help large purchasing organisations to get the benefits they want from office automation technology in an efficient and effective way.

The objectives of the programme are to help customers to identify and clarify for themselves the human factors benefits they want; to establish a database of the current state of the human factors in the customer organisation; and to create a realistic strategy for users to manage, monitor, and evaluate their own progress towards their own goals.

For the purpose of this programme, the term "human fac-



Physical environment is affected by automation: printers and keyboards make noise, machines give off heat, work spaces may be rearranged, lighting conditions may vary from one part of the office to another.

tors" is defined as those aspects of employee activity that are affected by an office automation installation. These comprise five basic areas: physical environment, corporate goals and objectives, organisation design and structure, role functions and accountabilities, and corporate culture and climate.

These human factors areas are based on theoretical constructs derived from business management and administration, ergonomics, psychology, sociology, and related behavioural sciences.

First, experience has shown that any office automation installation will affect the physical environment. For example, printers make some noise, keyboards beep and clatter, and machines give off heat. New machines replace old ones, work spaces may be rearranged,

be reflected by the feelings of employees towards job security, advancement, opportunities, and similar psychological and social considerations.

Employees' attitudes and beliefs about the equipment and its benefits need to be positive. Successful training requires proper confidence, trust and adequacy.

Office automation needs to be viewed as an investment made for total corporate benefit, and not just for a privileged few.

The decision to buy office automation technology represents the first major step towards transition from a traditional way of handling information to a new and vastly improved way.

The transition from the old to

Any installation will require that certain workers know how to operate and use the equipment to its maximum advantage. Even though most people find it easy to learn to use the equipment, a certain amount of training is necessary. Managers will also want to rethink how they accomplish administrative tasks and functions

the new should be regarded as a very high priority project, deserving continuing support and commitment from everyone within the organisation.

Finally, it is assumed that because the planning, implementation, and evaluation of office automation is a high priority project, it deserves a qualified and dedicated group of people in accept accountability for the success of that project.

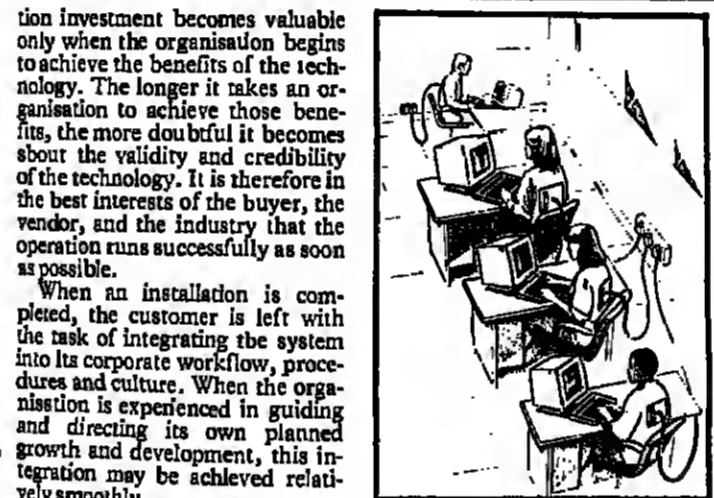
The purpose of Wang's Human Factors Programme is to help large user organisations to plan, implement, and evaluate the management of their own office automation installations.

The methodology focuses on how the people in the user organisation get their work done, how they work together to accomplish the goals of their company, and on the environment and the quality of work life that they face for at least eight hours every day.

Reg Broughton is director of marketing support services with Wang UK.

Managers will want to rethink how they accomplish their administrative tasks and functions. These new tasks and functions show how office automation can influence the way people accomplish their work.

Fifth the corporate culture and climate factor is perhaps the most significant element contributing to the successful return on a company's office automation investment. It affects the willingness and readiness of the people in the organisation to accept and use the equipment. Research has already shown that defensive behaviour by the employees can inhibit rather than facilitate a successful installation. Such defensive behaviour can



In extreme situations, it may be found that the hardware and software work perfectly well, but the organisation suffers from chaos and confusion. This reminds one of the surgeon who says: "The operation was a success but the patient is dying."

When workers do not or will not learn to use equipment properly, or when they are unclear about their new job requirements and how they are expected to do their



Reg Broughton demonstrates a typical Wang office automation installation.



STOCK MARKET

What's so special about the USM? Judith Morris reports

Everybody wants a share of the USM

THREE years ago the success story of a company like Apple - begun by two men in a garage and now incredibly prosperous - could never have been repeated in this country.

Until 1980, there was no vehicle for risk capital to be placed in the kind of entrepreneurial small-start up company, like Apple, which formed the basis of the computer boom.

But now, anything is possible, thanks to the opening of the Unlisted Securities Market (USM).

However, even given the present enthusiasm for computer stocks, it seems unlikely that more than one or two of the computer companies listed on the USM will join the Apple league.

The Unlisted Securities Market, launched in November 1980, opened up the advantages of the London Stock Exchange to growing companies which previously had no way of raising finance except by private funding or loans.

The market's primary aim was to stimulate the economy and revitalise the Stock Exchange. It has worked, with every new issue coming on the market being kept on in the firm belief that 90% of stocks offered one month will be higher the next.

The USM has also given the computer industry an unusual charisma, triggered by the current blind faith of the City in any computer-related activity, and assisted by the conviction of this and previous governments that if there is any future for the UK economy, then it must lie in the area of new technology.

But surprisingly, only 20 of the 175 companies listed on the USM are in the computer industry, although this figure is expected to grow dramatically now that the staggering success and potential growth of companies who have recently done it has been so widely publicised.

By its nature, the USM is almost tailor-made for many small to medium-sized firms in the computer industry. There is no lower limit on the size of companies, they need only have traded for three years - a full listing on the Stock Exchange demands five years - and they do not necessarily need to show three years of profits.

Only 10% of the equity capital has to be made available to outside shareholders - a full listing requires 25% - which means that the small businessman need not surrender too much of his personal interest or control of his company.

Costs are well below those of applying for a full listing, and as the companies don't pay large dividends, the money raised can be ploughed back to make the value of the company grow.

Of the computer companies who have chosen to go on the USM, most have done well and the shares have been well-received. Enthusiasm in the City has been generated by the prospect of sudden and dramatic growth which has long been absent among the "boring dinosaurs" of large industry listed on the Stock Exchange.

the USM are so diverse that it is often inappropriate to group them together.

The mixed bag includes software companies, micro manufacturers, bureaux, maintenance companies, recruitment companies and many who don't have a secure niche in the market and who will have lost their driving force in a few years.

One of the most recent additions to the USM is UK micro maker CPU Computers - which operates through CPU Peripherals, Synclec, and LSI. At the end of last month CPU offered four and a half million ordinary shares for sale by tender, at a minimum share price of 105 pence. It cost the company £300,000 to do it, and it raised £1.3 million for its own extra growth.

But managing director Tom Fitzpatrick did not see it as an easy task. He claims it took the company two years to get on the USM, with four or five months spent on writing the prospectus alone. The average timescale for preparation for entry to the USM is six months from start to finish.

"A lot of companies don't realise what it entails," he said. "We were turned over very carefully by the merchant banks and the Stock Exchange. However, we are now able to acquire companies, although we did make two acquisitions without the USM."

"There has been an amazing number of new companies formed over the past few years," he commented, "but they won't make it in the long run, it's just a boom. Being established on the Stock Exchange means you have to be a company of some standing."

One of the first companies to realise the potential of the USM was Scandata, which went in November 1980, on the first day the facility became available. It had

previously traded on the limited dealing market of the Stock Exchange's Rule 163, from which the USM was formed. Chairman Martin Baldwin claims that the publicity of being a founder member has done the company good.

"It raised money for the company and some for me as well," he explained. "Once you've got a quotation, albeit a USM, you have a vehicle for funding or acquisition. We haven't made a rights issue or an acquisition, but in theory the opportunity is there and it means you can measure yourself against others."

Scandata placed all its shares privately by the time it was quoted on the USM, which is one of the cheaper ways of doing it. It cost the company a mere £70,000, well below the average cost - and raised about £1.5 million.

At the moment the company's shares stand at £1.80, 55 pence more than they were originally sold for in 1980.

Another company with an early

USM quotation and a low bill is DEC OEM Rolfe and Nolan, which paid only £30,000 when it moved from Rule 163 to the USM in January 1981. Managing director Malcolm Rolfe said he would have been "very surprised" if it had cost him more. However, the company raised the relatively small sum of £120,000, and shares now stand at a fairly stable £1.80.

Although expenses and amounts raised vary considerably, an average cost for entry to the USM would be about £150,000. To look at a few examples, it recently cost Irish company Memory Computers £244,000 for a placing which raised nearly £3 million. System supplier Miles (33) paid only £45,000 for a placing which raised £735,000. Services company Tri-dent paid £51,000 in expenses for a placing - and raised £337,000.

The greatest market interest was stimulated this year when Micro Focus appeared on the USM. The company raised £3.7 million, less £300,000 expenses. Only about five other companies on the USM have raised over £3 million, and those have come from more established "glamour" industries such as television and oil.

According to City analysts, Micro Focus was successful because, unlike many other computer companies, it has a very distinctive market niche, a virtual monopoly and is already internationally established. Even those who cannot understand the nature of the company's products can see, at least, the sense in this.

Like CPU, Micro Focus chose - or was advised by a merchant bank to choose - to offer its shares for sale by tender, the most expensive route to the USM, but the one which ensures the highest possible price per share.

Although few computer companies have any short-term plans to move to a full listing, many realise that as more and more companies go on the USM with the minimum of requirements, the riskier it will become, and the more sense a full listing makes.

Most companies put the kudos of being a quoted company as one of the main advantages, after the ability to raise cash, although as the USM is still in its infancy it is difficult to put a value on the extent to which people have more confidence in a USM firm.

DPCE, for example, which went for a full listing on the Stock Exchange, takes the attitude that cash is more important than cash and given the sort of business it is in - maintenance - stresses that it needs the respectability of a full Stock Exchange listing.

There are some disadvantages for computer companies going on the USM. The very fact that the company is more public and exposed can be difficult to take for a small firm which has grown used to keeping itself to itself.

Managing directors, who are usually founders, suddenly find themselves talking to stockbrokers and merchant banks when they would be more happily employed in the day to day running of their company.

But, as far as the USM is concerned, it has made raising money very cheap and in that sense has done the industry a potential favour.

Judith Morris is Editor of Computer



Where everybody wants to be... the Stock Exchange.

"There has been an amazing number of new companies formed over the past few years. But they won't make it in the long run... Being established on the Stock Exchange means you have to have some standing." - CPU's Tom Fitzpatrick.

"Once you've got a quotation, albeit a USM, you have a vehicle for funding or acquisition... it means you can measure yourself against others." - Scandata's Martin Baldwin.

Rolfe and Nolan paid only £30,000 when it moved to the USM. "I would have been very surprised if it had cost more," - the company's managing director Malcolm Rolfe, speaking about the cost of entry.



FITZPATRICK

BALDWIN

ROLFE

PEOPLE

Institute honours Dr Brown

Dr Peter Brown, professor of computer science at the University of Kent, has been honoured by the Institution of Electrical Engineers. Together with a colleague, M. D. Roberts, he has been awarded the Hartree Premium for a paper published in one of the institution's journals. The paper described work done at Stanford University in California, to which Brown was invited as visiting professor in 1980. He worked with Roberts, a student at Stanford, on the design of silicon chips to make it easier for computers to process English words rather than numbers.



Prime Computer (UK) has appointed Pat Endacott (above) as director, customer services. Based at the company's headquarters in Hounslow, she will be responsible for field servicing, customer engineering and software technical support for Prime's 32-bit superminicomputers throughout the UK, with a staff of close to 200. She joined Prime in April 1982 as national field engineering manager.

Frederick Newall has taken over as chairman and managing director of NCR. He held a number of senior management positions with NCR in the UK until 1980, when he moved to its world headquarters in Dayton, Ohio, as assistant vice-president, commercial and industrial systems for Europe. Since August 1982 he has been executive assistant to the chairman and president of NCR Corporation.

Nigel Sweet joins Harris as computer systems sales executive for the South of England with a strong background in software, electronic design and computer sales. He was previously with Modcomp for four years as City sales executive with responsibility for its viewdata systems.

Computer Technology Limited has appointed Mike Rogers as personnel manager. He will co-ordinate the personnel function within CTL and advise on personnel and procedural policy for the Information Technology Group as a whole. He worked with Volvo Concessions for five and a half years.

Hunterskil South, a new regional office in Maidenhead, consists of Nick Gill and a team of sales consultants. Gill has been involved in sales and management training since leaving his position as managing director of KPG Computing Services in 1980.

Pactel has appointed Tony Bowden (below) to head its telecommunications systems implementation projects. He has extensive experience in message switching and data communications. He was previously with Selcon Consultancy International and Marcol Computer Services.



Carolyn Allen has been appointed group data processing manager by Ayrton Saunders, the Liverpool-based pharmaceutical company. The wholesale division of Ayrton Saunders has a T1900/10 installation in each of its three warehouses: Liverpool, Stoke-on-Trent and Birkenhead. These are used for order processing, inventory control and sales ledger.

Harris has appointed Mel Pashley as data systems sales executive. With responsibilities for the sale of Harris Series 1600 and 9200 terminal systems in the Midlands and the West, Pashley is based at the company's Manchester office. He joins Harris from Sperry Univac where he was sales executive for its terminals, mainframe and minicomputers.



DIARY

AUGUST 5, 12, 19, 26

Practical Wordprocessing is a user training course held at the Barton Grove Micro School, Warrington. Other courses in August cover wordprocessing theory and practice, electronic book-keeping, building and using an integrated system and building and using a database. Details: Training manager, Warrington 36642.

AUGUST 8-11

Practical Computer Auditing for business and systems analysis is organised by Control Data. It will take place at Control Data Institute, London. Cost is £445. Details from: Sylvia Lyons, 01-240 3400.

AUGUST 12-17

Introduction to Organisation and Methods is designed for those involved in administration of management who need to review current systems. It takes place at the

Henry VIII Hotel, London. Course places at £510 may be booked through the course registrar, Cherry Bignmore, on 01-261 9237.

AUGUST 16

Data Communications Overview at the Control Data Institute, London, gives an introduction to modern communications systems. Organised by Control Data, it costs £145. Details from: Sylvia Lyons, 01-240 3400.

AUGUST 30-SEPTEMBER 2

The second International Conference on Database, organised by the British Computer Society and universities of Aberdeen and Cambridge, takes place at Churchill College, Cambridge. Details: Peter Hambley, Middlesex Polytechnic, London N11 2NQ.

SEPTEMBER 5-8

IBM Cobot Review, a course or-



Laurie Ellis has been appointed manager of the Advanced Micro Systems Group at Digilog, the new technology systems house based in London's Covent Garden. The group does software projects for communication and emulation systems and complete systems work on multiple processors, network and non-stop machines. It is currently installing its first major system using the Xionics XINET

David Craft has been appointed joint managing director of a new computer services bureau, Bellman Computing, based in Huddersfield. He was formerly senior sales consultant of Goldsmith Computing. Peter Lynch has been appointed the other joint managing director. He was previously director of Goldsmith Computing, where he headed the contract recruitment division and the northern computer services marketing operation.

Datac has appointed Tad Clare to cover the London area as sales executive. He joined Datac in June and has 23 years' experience in the computer industry, recently as a senior sales executive with Nixdorf.

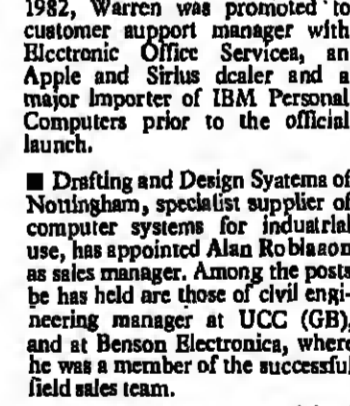
To help develop the expanding network of dealers for the 16-bit Professional Computer, Wang UK has appointed Kim Warren (above) as independent sales organisations account manager. In 1982, Warren was promoted to customer support manager with Electronic Office Services, an Apple and Sirius dealer and a major importer of IBM Personal Computers prior to the official launch.

Drafting and Design Systems of Nottingham, specialist supplier of computer systems for industrial use, has appointed Alan Robison as sales manager. Among the posts he has held are those of civil engineering manager at UCC (GB), and at Benson Electronics, where he was a member of the successful field sales team.

Yvonne Caunter has joined MSA (Management Science America) as marketing assistant. Her main responsibilities will be for seminars, exhibitions and research. She was previously sales director, technical policy, director, technical, and director, strategic projects. David Free (right) has been appointed general manager of STC's Information Management Division, which has been created to co-ordinate and develop all aspects of information technology within the company. He was previously general manager of STC's Information Terminals Division at New Southgate in North London.



Bernie Mills (left) has been appointed managing director of Standard Telecommunication Laboratories (STL), the Harlow-based research centre of Standard Telephones and Cables (STC). Born in Australia, he began his career with STC as a development engineer in 1951. His recent posts include director, technical policy; director, technical; and director, strategic projects.



David Free (right) has been appointed general manager of STC's Information Management Division, which has been created to co-ordinate and develop all aspects of information technology within the company. He was previously general manager of STC's Information Terminals Division at New Southgate in North London.

CONFERENCES

THE User Interface: The Ergonomics of Interactive Computing is the title of a conference organised by the Ergonomics Society. It takes place on September 14, 15 and 16 at Leicester Polytechnic, Scitoville Campus. Provisionally, papers will cover signposting around interactive design; experimental study of usability; GKS as a tool for design of ergonomic graphical software; use of flexible voice output techniques; automatic speech recognition; application of path algebra to interactive dialogue design; information technology ergonomics design in Europe, etc. Fees are £70 for Ergonomics Society members; £80 for non-members. Details from: Diane Fox-Kirk, Leicester Polytechnic, (0533) 549972.

EDINBURGH will host the Hewlett-Packard 3900 International User Group's annual European conference from October 2-7. The venue is the George Hotel. Technical sessions and tutorials will take place on data processing management, office automation, data communications, utilities, and applications in business, manufacturing and engineering. Further information from: The Secretariat, HP 3900 International User Group, 10 Rutland Square, Edinburgh EH1 2AE. Tel: 031-941 9960.

PAPERS are requested for the sixth European conference on electrotechnics, Eurocon, to be held in Brighton from September 26-28 1984. Details: IRE, 01-240 1871.

Tom Hohenberg has been appointed marketing manager of Acorn Computers of Cambridge, maker of the BBC Microcomputer. Previously, he was director of marketing at A. M. Admel, the engineering graphics division of A. M. International. Acorn has also appointed John Caswell art and promotions manager. He used to be with the design company, Optimus, for three years, working on various electronics companies' accounts, including Acorn's.

Terry Shortt has been appointed general manager of Data Packaging, Mullingar. He joined Data Packaging in November 1980 as moulding manager. The company has also announced the appointment to the board of directors of James Kavanagh. Kavanagh joined Data Packaging as financial controller in June 1982.

Brian Forsdick has been appointed sales and marketing manager of Cleao Computing Systems, the London-based specialist in high performance, expandable, networking multi-processor systems and special application software. Previously with Rank Xerox and UCSL, he will have full responsibility for expanding Cleao's business in the multi-user market, with special emphasis on stockbroker, motor agent, staff rostering and membership records systems.

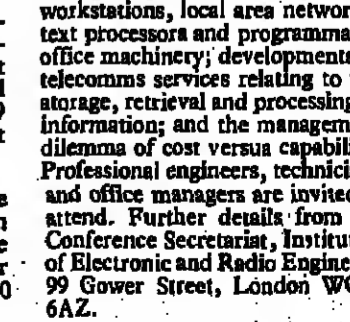
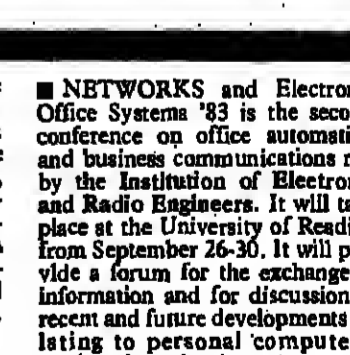
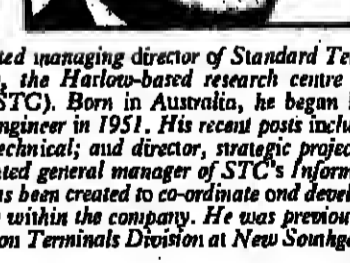
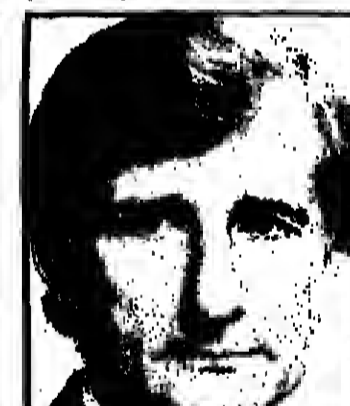
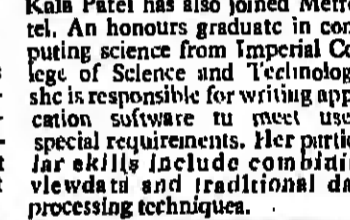
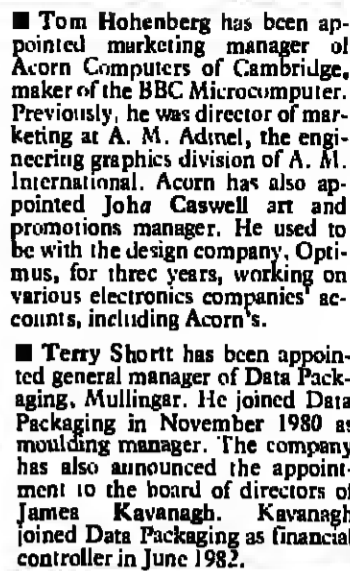
The Electronics Recruitment Company has been joined by David Jones who will head its systems sales division. He will primarily be recruiting DP and telecommunications sales and marketing personnel. He was most recently international account manager.



THE User Interface: The Ergonomics of Interactive Computing is the title of a conference organised by the Ergonomics Society. It takes place on September 14, 15 and 16 at Leicester Polytechnic, Scitoville Campus. Provisionally, papers will cover signposting around interactive design; experimental study of usability; GKS as a tool for design of ergonomic graphical software; use of flexible voice output techniques; automatic speech recognition; application of path algebra to interactive dialogue design; information technology ergonomics design in Europe, etc. Fees are £70 for Ergonomics Society members; £80 for non-members. Details from: Diane Fox-Kirk, Leicester Polytechnic, (0533) 549972.

THE Computing Services Association is to hold its first conference next year. The 1/2-day event is scheduled to take place at a hotel in Bournemouth from February 29 to March 1. It was announced at last week's quarterly meeting.

NETWORKS and Electronic Office Systems '83 is the second conference on office automation and business communications run by the Institution of Electronic and Radio Engineers. It will take place at the University of Reading from September 26-30. It will provide a forum for the exchange of information and for discussion of recent and future developments relating to personal computers, workstations, local area networks, text processors and programmable office machinery; developments in telecommunications relating to the storage, retrieval and processing of information; and the management dilemmas of cost versus capability. Professional engineers, technicians and office managers are invited to attend. Further details from the Conference Secretariat, Institution of Electronic and Radio Engineers, 99 Gower Street, London WC1E 6AZ.





Search for higher speed and greater reliability goes on

Tony Dench of Racal-Milgo explains how modems are becoming faster and more efficient to suit users

IT WAS relatively easy for telecommunications engineers to rise to the challenge from computer users and exploit existing voice telephone networks to carry computer data.

The medium offered existing and very comprehensive coverage of most technologically advanced countries and proved immensely practical for carrying data at speeds up to and above 9,600 bits per second.

Over the past decade, however, computer technology has gradually outgrown the technical compromise of voice-grade telephone lines and network planners are now looking to the digital network to provide the medium for a new generation of ultra-high speed data communications.

The change will be slow - with finance playing a major role - and it is generally accepted that it will be a good 10 years before truly international digital networks can be taken for granted.

The problems which still confront the data communications specialist are how to make the best use of existing analogue networks and how to satisfy the computer users' calls for still higher speeds and greater reliability, while working within the telephone line's limitations.

This article will discuss data

communications at 9,600 bps - the most commonly used "high-speed" - and detail the emergence of a new technique which promises better and more reliable data communications.

Although the human voice has a wide bandwidth, that is it covers a large frequency range, the information conveyed in speech can be propagated within a comparatively restricted bandwidth.

Data transmitted from computers is in a digital form, so it cannot be connected directly to a voice telephony circuit. A number of control conditions are required to enable computers or terminals to communicate and each would require a separate voice circuit. To overcome these difficulties data modulator/demodulators, or modems, were developed. The function of a data modem is to convert the digital output from a computer into a signal suitable for transmission on a voice line and to concentrate the control conditions on to a single circuit.

One of the earliest data modem modulation techniques was Frequency Shift Keying, or FSK. This technique transmits a frequency for each of the two digital input states and is easily detected at the receiving end. It is only of use for asynchronous or anisochronous transmission codes.

With FSK techniques the line signalling speed, measured in units/second, is the same as the computer transmission speed and at lower speeds bidirectional transmission is possible. Recommendation V21 of the international standards body, the CCITT, operates in this way.

Recommendation V21 modems are mainly used for dial-up operation over the PSTN (Public Switched Telephone Network), as they can simultaneously transmit in both directions. However, Recommendation V21 modems and other similar modems can only operate at speeds of up to 300 bps.

The next step in modem development was to use a separate transmit and receive circuit and a wideband FSK signal. It should be noted that, while FSK modulation is simple, cheap and effective, it requires a comparatively large bandwidth and is inefficient in terms of throughput on a telephone channel. The lowest transmitted carrier frequency has to be higher than the data signalling rate or it would be impossible to detect at the receiver. (If the frequency were lower, less than one cycle would be transmitted per bit). Using a separate transmit and receive circuit, (known as a four-wire circuit because four wires were involved - two for transmit and two for receive) data signalling rates of 1,200 bps can readily be achieved, with a secondary speed of 600 bps being available if required.

CCITT Recommendation V23 operates in this way. The four-wire FSK technique was most relevant for leased line operation, where the circuit presented at the customer's premises consisted of a transmit and receive circuit anyway and subsequently was used to a lesser degree on PSTN dial-up operation.

Obviously FSK techniques were going to restrict data transmission speeds and so the leap was made to Phase Shift Keying (PSK), Differential Phase Shift Keying (DPSK), Amplitude Modulation/Differential Phase Shift Keying (AM/DPSK) and Quadrature Amplitude Modulation (QAM) Schemes.

Phase Shift Keying operates in the same manner as FSK, except that the phase is altered instead of the frequency. It did not prove particularly suitable for data transmission and was only of use for asynchronous or anisochronous codes. Differential Phase Shift Keying, however, proved to be more suitably suited to synchronous transmission.

As the need for high speed data transmission increased so did the demand for efficient line codes and synchronous transmission was largely adopted by computer manufacturers for speeds of 2,400 bps and above. Figure 1 shows a "Constellation" diagram for DPSK signalling; the example given is CCITT Recommendation V27, which is for a speed of 4,800 bps. Each point on the diagram, or

symbol, represents a phase change angle. (In simple PSK the same diagram would apply, but the phases represented would be absolute and not changes with respect to the previous phase sent). As can be seen from the figure, each of the eight symbols is assigned a three bit, or tritbit, value and represents three data bits. Therefore, the line signalling speed is: 4,800bps/3 bits per symbol = 1,600 symbols per second.

Data transmission at 9,600 bps was the next hurdle. It is worthy of note that 9,600 bps data transmission is still the most significant of the higher speeds and 9,600 bps modems account for 30% of the total European modem market.

The techniques used to transmit data at 9,600 bps are various, but we will only consider the two predominant types; the Recommendation V29 scheme and the technique known as 4 x 4, Recommendation V29 was ratified by the CCITT in May 1976, against fierce competition from other schemes,

most notably from 4 x 4.

The V29 Scheme is basically an extension of the Recommendation V27 DPSK Scheme, introducing two-level amplitude modulation (AM).

Figure 2 shows the Constellation Diagram for the Recommendation V29 Modulation Scheme. As in the V27 Constellation Diagram, phase change is depicted by angle of rotation from the 0° axis and amplitude is represented by the distance from the symbol to the centre of rotation. The table shows the four bit, or quditbit, data assignment of each of the 16 symbols. The line signalling speed for Recommendation V29 Modulation (and also for 4 x 4 Modulation) is: 9,600 bps/4 bits per symbol = 2,400 symbols per second.

The economy of this form of modulation is obvious; for a doubling of transmission speed over the Recommendation V23 1,200 bps modem, eight times the

Continued on Page 25

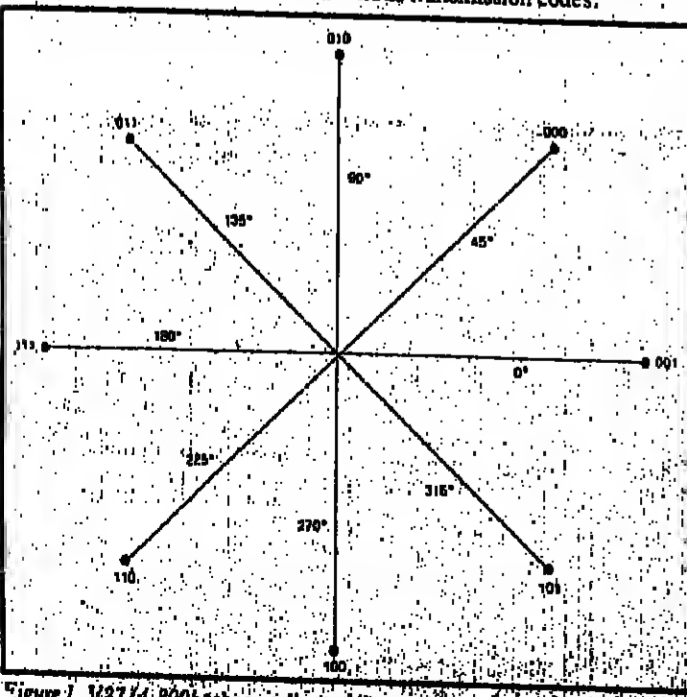


Figure 1: V27 (4,800bps) constellation diagram.

Data Quabit				Phase change	Amplitude
Bit: 1	Bit: 2	Bit: 3	Bit: 4		
0	0	0	1	0°	3
0	0	0	0	45°	5
0	0	1	0	90°	3
0	1	0	0	135°	5
0	1	1	0	180°	3
1	0	0	0	225°	5
1	0	1	0	270°	3
1	1	0	0	315°	5
1	1	1	0	315°	3

V29 encoding scheme.



From Page 24

number of data bits can be transmitted per unit time.

The 4 x 4 scheme is similar to Recommendation V29 in that it also operates at a line signalling speed of 2,400 bps and utilises 16 symbols. The principal differences are that the symbol locations are given as cartesian (rectangular) co-ordinates and not polar co-ordinates as in Recommendation V29 and that the symbol co-ordinates are absolute and do not change with respect to the previous symbol sent. (However, in practice a differential encoding system is

normally applied to prevent loss of synchronisation on continuous data patterns.)

Figure 3 shows the 4 x 4 Modulation Scheme and the effect of placing the symbols by means of cartesian co-ordinates is immediately apparent; none of the symbols are located on the perpendicular axes. QAM techniques, considered theoretically, utilise two simultaneous carrier frequencies of the same frequency, but with a fixed phase difference of 90°; hence they are considered to be in Phase Quadrature and this gives QAM its name. (It should be

noted that the term QAM is often used for AM/DPSK Modulation Schemes which do not or only partly employ quadrature amplitude modulation).

Now to the on-line comparison of 4 x 4 and V29 modulation. Both schemes are a combination of phase and amplitude and both require a line signalling speed of 2,400 bps to transmit data at 9,600 bps. The similarity of the two schemes means that in practice they do not perform altogether differently. The 4 x 4 scheme though has two distinct advantages in terms of performance over Recommendation V29; one is its increased immunity to "amplitude hits" and the other is its increased performance on noisy lines and in particular on PSTN dial-up calls.

Amplitude hits are caused by automatic route switching (in the event of the primary route failing) or transient AGC (Automatic Gain Control) operation on the trunk network carrier system. The form of disturbance amplitude hits cause is a momentary jump, upwards or downwards, of receive level. This may cause loss of synchronisation between transmitter and receiver and corrupt the

data being transmitted during the "hit."

Any modem offering increased immunity to this disturbance must be of major advantage to data transmission users.

The increased performance of the 4 x 4 scheme on noisy lines should increase the data throughput. Data throughput is a measure of the actual data correctly received by the receiving device and is usually less than the data transmission speed. The main reason for this is the "block retransmission" system of error correction, often referred to as ARQ (Automatic Return Query).

With this form of error correction each received datablock is checked for errors. If any errors are received a supervisory message is returned to the transmitting device requesting the last block to be retransmitted.

It is apparent that any slight increase in performance on noisy lines could substantially improve data throughput efficiency.

The correct term for line noise is Gaussian Noise and it is caused by the normal motion of electrons in conducting materials. The typical level of Gaussian Noise encountered on a leased data transmission line is -45dBm0, where dBm0 is decibels relative to 1 milliwatt in a 600Ω line and compared with the relative transmission level point, which varies as the signal path progresses through a network. The nominal data transmission level is -13dBm0. If the data is being transmitted at -13dBm0 and the line noise is anomalously high at -35dBm0, then the signal to noise ratio is approximately (-13) - (-35) = 22dB.

In this situation a modem with a 22dB signal to noise performance would be running on its furthest edge, requiring many block retransmissions. Any further deterioration of signal to noise ratio would prevent data transmission altogether. It is for this reason that the 4 x 4 modulation scheme is superior to Recommendation V29, it can operate on lines with a signal to noise ratio up to 1.3dB worse than a V29 modem.

From the comparison of 4 x 4 and Recommendation V29 Modulation Schemes it is evident that the 4 x 4 scheme is superior in terms of on-line performance to the V29 scheme. Until now, however, there have not been any modems available in the UK which have made use of 4 x 4 scheme. The Racal-Milgo MPS96 modem has now changed this situation and has been made available to exploit the additional performance of the 4 x 4 Modulation Scheme.

The MPS96 is based upon the very successful MPS9601 and MPS9629 range of modems and has all the same options. This includes the "Fasttran" option for multipoint circuits which provides an ultra-fast turn-around time of 30 milliseconds. CCITT Recommendation V29 specifies a turn-around (RTS-CTS delay) of 253 milliseconds.

Furthermore the increased performance of the 4 x 4 scheme will make 9,600 bps dial-up operation more efficient and therefore more cost effective. The 4 x 4 Modulation Scheme is considered a major contribution to the continuation of efficient and cost effective 9,600 bit/s data transmission.

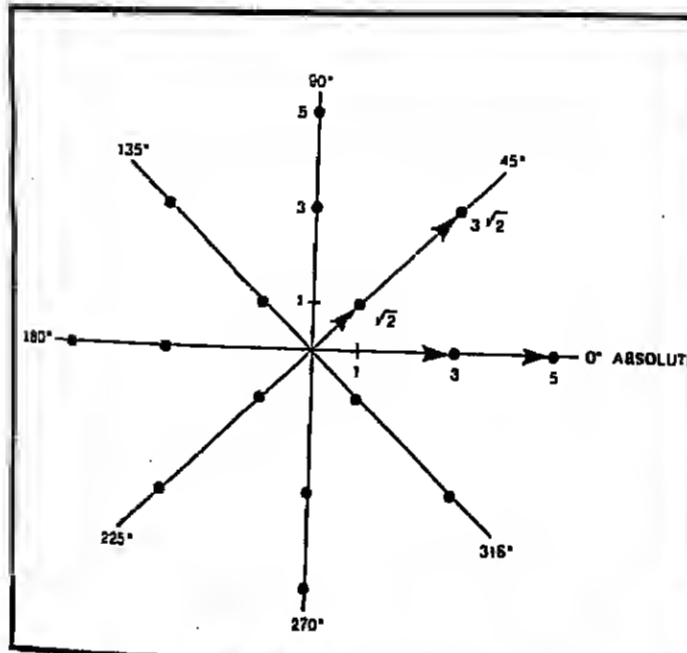


Figure 2: V29 constellation diagram.

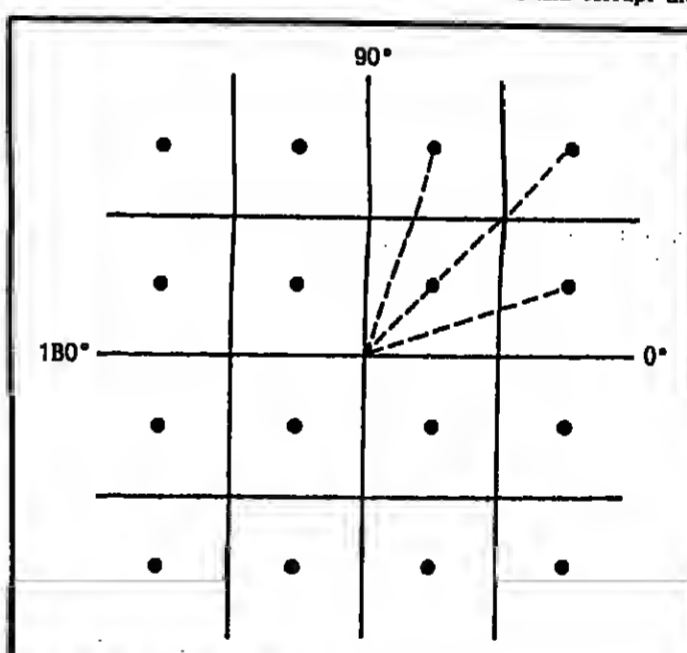


Figure 3: 4x4 constellation diagram.

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Extension of digitiser technology

A SCINIC digitiser, the Model GP-8, has been announced by Science Accessories Corporation, to extend some digitiser technology, making this information handling and processing technique available to new applications.

The GP-8 mates the new technology and packaging developed for the GP-7 Grafbar digitiser with the capability of the L-frame microphone array used for years with the GP-3 and GP-6 series digitisers.

The GP-8 features an 8-bit microprocessor which permits the system to perform five standard program functions via menu entry, including Origin, Line, Metric, Stream, and Cancel. The five-function menu may be located anywhere in the active area, as specified, and the menu may be erased by dip switch control, providing an unencumbered work area with no loss of the last input function.

Another feature is two-way communication, permitting remote computer control of all digitizing functions. Remote trigger capability is also offered.

Either stylus, cursor with cross-hair, or both may be used with the GP-8 to take data and to make menu selections. The stylus contains both the sonic energy element and a ballpoint cartridge in choice of ink colours. When hard copy is not required, an inkless cartridge may be substituted.

A plastic, needlepoint, non-scratching stylus for use with X-

rays or CRT displays can be supplied; black or white stylus is offered in contrast with the field being digitised.

The cursor incorporates a piezo-electric ceramic as the energy source. Cross-hairs are used for high accuracy digitising.

The free-standing GP-8 microphone assembly requires no special digitising surface. The design also permits mounting of the microphones on a variety of display surfaces from light boxes to CRTs. In addition, Science Accessories Corporation offers standard GP-8 tablets with the microphone pre-mounted on clear acrylic for use with light tables, or on formica surfaces for those who prefer a solid data tablet on which to work.

The GP-8 sonic digitiser quickly allows the conversion of graphic information into numerical or digital form for convenient input into data processing, recording, or transmission equipment. The control unit initiates the energy pulses which are converted into sonic waves by the hand-held stylus or cursor.

The system measures the times required for the sonic energy to reach the X and Y sensors in the microphone assembly and converts these times into distance measurements in digital form.

Science Accessories Corporation (CW), 970 Kings Highway West, Southport, Connecticut 06490.

Workstation allows for transfers

A WORKSTATION called the MDB Micro PDP-11 Computer System, from MDB Systems, is functionally equivalent to the DEC product, providing 10.4 Mbyte Winchester and dual floppy subsystems.

One major additional feature, however, is its floppy diskette subsystem, allowing diskette transferability to and from other DEC systems.

MDB Systems, has designed the system to accommodate all MDB interface modules such as 8 or 16 channel multiplexers, line printer controllers, disc and tape controllers, high speed DMA modules and interprocessor-link modules.

The unit includes a removable front panel, a BPA84-T backplane/cable guide assembly, with 22-bit addressing and removable bus terminator. The backplane can accommodate a total of 8 quad or 16 dual size modules (two dual and one quad modules are already installed in system). Four cooling fans provide 400cfm air circulation.

The MDB Micro PDP-11 is RETMA rack mountable, and can be slide mounted by use of optional slides.

MDB Systems (CW), 1995 N. Batavia Street, Orange, California 92655. 714/998-6900.

Keeping the micro desk tidy

A COMPACT work desk, the Micro Tidy, to house all the equipment, tapes and manuals of the enthusiastic personal computer user, is now available from Abacus Marketing.

This purpose-designed unit, said to be suitable for the IBM 64, Visio, BBC, Dragon, Sinclair, Epson and many other home computers is available on its own or as a recommended retail price

of £39.95 (inc VAT) or free-standing with black powder-coated metal legs at £79.90 (inc VAT). Micro Tidy, a British designed product, is manufactured by Conund Design Systems and is sold primarily through micro dealers.

Abacus Marketing (CW), Abacus House, 60 Barbomine, Worcester, WR4 1JA. Tel: (0905) 611161.



A SERVICE introduced on Prestel changes the traditional picture of chess as a table-bound game. Called Mailbox Chess, the new facility allows any chess player who is also a Prestel user to challenge electronically other Prestel users to a game, and to conduct each move of the game through Prestel's message service. Some 50 chess enthusiasts are already listed on Prestel's chess directory, and the service is heavily used, with many games played through Prestel's electronic Mailbox. Prestel Mailbox also allows any Prestel user to send instant messages to any other Prestel user and has many business as well as home applications.

Our picture shows eight-year-old Charles Henderson, from Kingston, Surrey, sending his move through Prestel to his opponent.

Up to 16 memory maps can be pre-defined

MEASUREMENT Systems has announced the release of the 901 single board CPU. Based on the 2MHz 6809 8/16 bit processor, the 9600 offers state of the art module level processing for a wide variety of bus-oriented applications.

The single Eurocard size board offers user features including real time clock, four DMA channels, memory management all running with the 2MHz 6809. The board compatibility of the product with the Rockwell RM65 bus provides wide selection of hardware boards.

The processor is capable of addressing the full 1 Mbyte offered by the 6809. The system supports multi-tasking and up to 16 memory maps can be pre-defined and switched. Additional maps may be held for loading during task switching.

Four DMA channels are fully implemented on the board relating significantly bus arbitration and control circuitry for any peripheral board requiring DMA facilities.

Measurement Systems (CW), Mill Reef House, 9-14 Cecil Street, Newbury, Berkshire. Tel: (0635) 45420.

CAE system runs in dual mode

A COMPUTER-AIDED engineering station for the design of digital electronic systems that functions both as a standalone 32-bit based CAB design station and as part of a computer network including mainframes, has been announced by Valid Logic Systems.

Called Scaldsystem II, the unit can operate with all Scald software validation tools as a design station or as part of a host-based configuration. When in a standalone mode the system gives the designer a dedicated 32-bit processor for validating designs, plus a 16-bit processor for graphical capture of schematics.

A range of communication facilities allows the Scaldsystem to

communicate with hosts or other systems such as the Scaldsystem I or Scaldstar. These include both parallel and serial ports, and a Ethernet networking capability. Data can be transferred at a speed of up to 10MHz.

The high data transfer rates allow fast interfacing between units for processing large simulations and design validations, as well as for data sharing within an organisation. Terminal emulation of VT-100 or 3270 is also available.

Scaldsystem II incorporates Scald software tools that are used in all Valid design systems.

Valid Logic Systems (CW), 69 N. Mary Avenue, Sunnyvale, California 94086.

15-inch tiltable screen

THE VDN 52500 asynchronous display terminal offers advanced features including a tiltable 15in screen and a detachable low profile keyboard.

The screen can be moved in both vertical and horizontal directions.

Based around the 8085 microprocessor, the electronics are mounted on a single printed circuit board located in the base of the terminal. Up to four pages of alphanumeric characters or block graphics can be stored in the terminal's memory. All upper and

lower case characters, with specified symbols, can be displayed on the screen. The display format is 24x80 characters with a 25th status line.

Remote and keyboard commands provide full cursor and screen control, editing and form management.

Cursor commands include: left, right, up, down, etc, as well as full tabulation.

Alm Digital Systems (CW), 98 Crofton Park Road, Crofton Park, London SE4 1AL. Tel: 01-690 44289.

Acoustic covers offer a quieter life

TO reduce word processor or printer noise levels - and the stress levels of everyone within earshot - Innac has announced its acoustic cover range, called The Hushcover.

This can reduce the noise level of a typical printer from around 64dBA to less than 50dBA, depending on the printer make, says Innac, and represents a sound energy reduction of well over 95%.

The Hushcover, designed and tested in conjunction with ICI Acoustics has several advanced design features such as the safety win-

ing of the printer to the fan to ensure that should the fan stop, the printer will immediately cut out and prevent overheating. The cabinet is constructed from two layers of steel and packed with glass fibre and mineral wool.

The lid is made from neutral-tinted perspex and is available in two versions, either domed for automatic paper feed or low profile for continuous feed.

Both types of lid have acoustic seals and gas struts for easy access.

The Hushcover, styled to blend

in with most decors, is finished in chocolate and cream colours. There are three versions: the HC222 for tractor feed printers such as the Commodore 4022 or Oki Microline 80 series costs £355; the HC333 for tractor feed printers such as IBM5255 or the Amstrad DP9000 costs £445; and the HC333H for printers with hopper-feed attachment such as the Xerox 860 or Quine Sprint costs £495.

Innac (UK) (CW), Dart Road, Asmear, Runcorn, Cheshire, WA7 1PZ. Tel: (0928) 67551.

First shot in bid for daisywheel market

AS its opening shot in what is promised to be a major assault on the low end of the daisywheel printer market Brother has launched the HR-15.

For a printer retailing at around £500 the HR-15 boasts a remarkable specification including a 3K buffer with single button text reprint, two colour (red and black) printing, super and subscripts and proportional spacing.

Tractor feed and automatic cut sheet feeders are available, also a keyboard which allows the HR-15 to be used as a conventional typewriter.

Like all Brother daisywheel products, including its electronic typewriters, the HR-15 uses a standard cassette loaded daisywheel.

The cassette is designed to increase both speed of loading and the life of the wheel itself.

The HR-15 cassette ribbon ensures simple and clean loading.

Brother daisywheel printers are claimed to dominate the low end of the US market and aim to capture a major share of the UK market this year.

Jones-Brother (CW), Office Equipment Division, Shepley Street, Audenham, Manchester M34 5JD. Tel: 061-330 6531.

'Error-free' V22 modem announced by Jaguar

A MODEM offering users error free data transmission on dialled connections is the latest product announced by Jaguar Communications.

The Jaguar 1212 ARQ conforms to V.22 standards for asynchronous full duplex operation at 1200bps and incorporates error detection and correction circuitry. Existing users of V.22 modems will know how error prone they can be, says Jaguar.

The 1212 ARQ will guarantee data integrity no matter how bad the telephone connection, it is claimed.

The modem senses whether the distant end V.22 modem is fitted with this ARQ feature and disables the error correction if it is not



The Microscribe MT80 from Terminal Technology.

80-character display terminal launched

TERMINAL Technology has announced an 80-character display terminal, the Microscribe MT80.

The new CMOS technology terminal is primarily aimed at OEM applications, and field service repair use. The ability to run diagnostic routines, retrieving and storing results simultaneously, is expected to be of particular benefit to service engineers.

In OEM applications, the Microscribe is suited for use as a low-cost dedicated terminal on peripherals requiring periodic operator input, and for displaying status messages and prompts.

The terminal can be downline loaded, with special function keys to call up frequently used subrou-

tines. The industry standard RS232 interface is used, with X-on/X-off and data transfer rates up to 9600 baud.

The two-line by 40-character display of the latest Microscribe makes it particularly suited to applications involving lengthy or complicated test - for example in electronic mail or information retrieval systems. Microscribe has been successfully linked to such databases as Telecom Gold and Dialog.

The terminal weighs 500g, and measures 190 by 140 by 26mm.

Terminal Technology (CW), Clarence House, Clarence Place, Newport, Gwent NP23 7AA. Tel: (0633) 214289.



The Jaguar 1212 ARQ modem.

fitted. In this way the Jaguar 1212 can be used as a central site modem accepting calls from any other manufacturer's V.22 modem. The device is British designed and built.

Jaguar Communications (CW), Elton House, London Road, St Albans, Herts. AL1 1LJ. Tel: (0727) 32983.

System cuts out double feeding problems

A SYSTEM which is said to eliminate paper snagging and double feeding and promises an end to the excess back through the dispenser head, lightly clamping it ready for further use, and then selecting the alternative paper to be run.

The system called Easy Feed stores up to eight stacks of different types of continuous stationery and holds the ends readily accessible and available for immediate use.

It consists of a trolley with eight trays, split four and four. The eight sizes or types of paper are fed upwards through the centre. At the top of the trolley the ends of paper are gripped in the slots of a dispenser head from which any one can easily be released to facilitate printer feeding.

The trolley, pre-loaded with paper away from the printer, is pushed into position and the specific paper required is released and loaded. During operation the printout is automatically derived

Battery power for portable computer

EPSON's new battery-powered portable computer, the HX-20, is now available from Stonefield. No bigger than an A4 briefcase and weighing less than two kilograms, the HX-20 incorporates a printer, LCD display and twin CPUs.

Other features falling within the basic price of just over £400 are enhanced Microsoft Basic, clock and 16K memory, with a built-in cassette drive available for an extra £75.

Because of its light weight and complete portability, Stonefield has selected the HX-20 as a suitable unit for use in industrial environments. A mini-micro communication board (RS232) can be linked to the HX-20, enabling Stonefield to supply a low-cost data logging system for many applications, especially those involving the gathering of data from remote sites, or via the telephone network.

The HX-20 uses Nicad batteries with sufficient capacity for over eight hours' continuous printing or about 50 hours of more normal use before recharge.

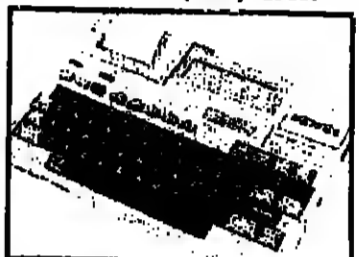
The total CMOS system allows for data retention of the entire 16K of supplied RAM memory providing a powerful data storage capability.

Interfaces for serial printers,

high-speed serial, bar code wands, external cassettes and expansion boxes add to the versatility of the HX-20. The memory expansion can add RAM up to 32K and ROM up to 64K in various combinations. A system bus and microcassette or ROM cartridge sockets complete the range of interfaces available.

Enhanced Microsoft basic with an addressable real time clock, interval timer and programmable tone generator allow for easy generation of industrial measurement, timing, storage or test functions as well as allowing text or mathematical problems to be solved on site, says Epson.

Stonefield (CW), Denne Parade, Horsham, West Sussex RH12 1DL. Tel: (0403) 51366.



Epson's battery-powered portable computer.



The two-drawer Firemaster sidefile from Datacare.

Space-saving cabinet puts safety first

THE new Firemaster II fireproof side-filing cabinet can safely store a wide range of paperwork, says Datacare Business Systems.

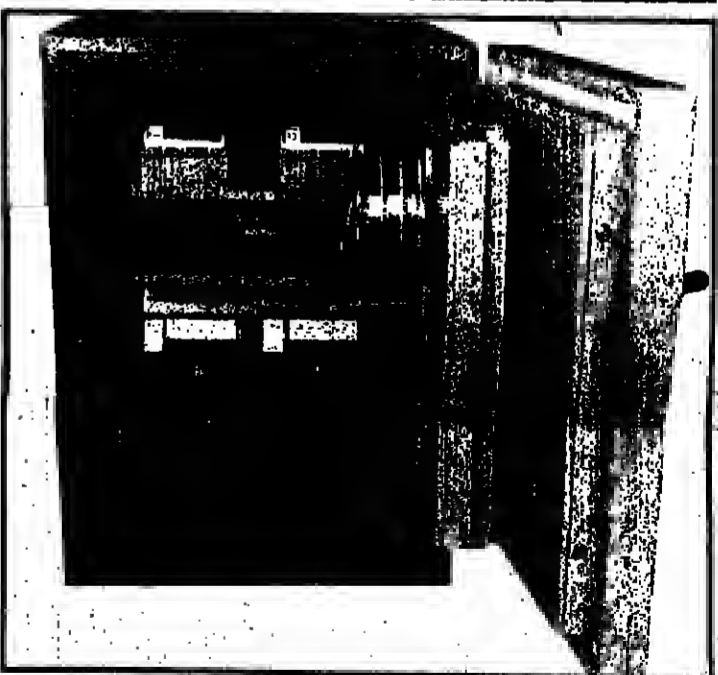
The extra-deep drawers with adjustable width fittings can take printouts, conventional and lever-arch files and have 60% more capacity than conventional filing drawers, the manufacturer claims.

Available in two or three drawer versions the Firemaster side-file has undergone independent tests by the American Underwriters Laboratory showing that it provides protection of paper contents against severe fire exposure reaching 1700°F for at least one hour and during an additional "sweat out" period without the interior temperatures reaching 350°F, the point at which paper starts to char.

An optional wooden top is available with the cabinet which comes in two or three drawer versions, turning it into a counter unit.

Datacare offers free replacement of any unit damaged beyond repair by fire.

Datacare Business Systems (CW), Chapel Court, Borough High Street, London SE1 1HR. Tel: 01-403 4671.



The Ordina 155 diskette safe.

Diskette safes pass test

FIRE is a major hazard to business. The consequences can be disastrous. Historically 50% of all organisations whose vital records are destroyed are liable to immediate collapse.

The trend towards computerisation means that more businesses are now vulnerable.

Fletcher-Bauche, the international

duced two diskette safes both of which have passed the German VDMA 560D test.

The storage capacities of both safes range from 180 to 460 8in floppy discs and 410 to 1080 5¼in mini diskettes.

Fletcher-Bauche (UK) (CW), 22-24 Marlborough Grove, London SE1 5JT. Tel: 01-231

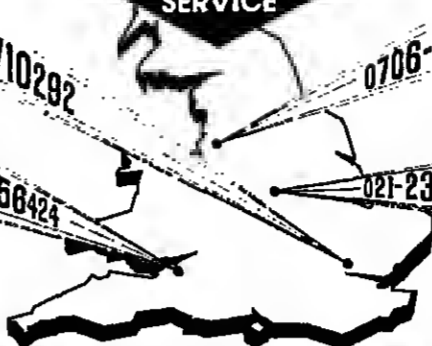
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81 LADOS CALSIVAYIA, SUNPONTA, RIETUL, TEL: 022-KARASDA.

SENIOR APPOINTMENTS - £14K +

SYSTEMS SOFTWARE

ANALYST/ PROGRAMMER

CONTINUOUS PROCESSING

c.£15,000 AND CAR

CITY BASED

A vendor of worldwide renown has recently launched a new range of Continuous Processors in competition in TANDEM and CTL MOMENTUM.

This is an excellent ground-floor opportunity to join them while the Division is still in its formative stages.

They are seeking a young person capable of a multi-faceted role with a heavy technical content and a great deal of customer interfacing. Pre-sales involvement will include help on proposals, demonstrations and presentations. Candidates with experience in some of the areas listed below should identify well with this position:

- ★ Good real-time on-line systems software
- ★ TANDEM, DEC, PRIME or DATA GENERAL equipment
- ★ COBOL or other applications, software languages
- ★ Communications and/or database software

Please contact BOB BOWER for further information

Ref. CW2107/1

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SENIOR SYSTEMS CONSULTANT

OFFICE AUTOMATION

TO £18,000 AND CAR

CITY BASED

MAJOR ACCOUNTS

This important position has been created to complement the existing Marketing Group. It is primarily concerned with all areas of pre-sales support covering the U.K. An average of two/three days a week will be spent out of the office with periodic trips (approximately five days every two/three months) to the Company's H.Q. in Europe.

Requirements include a good understanding of OA and current products available, for both central and distributed systems. Experience of implementing OA systems (Wang, IBM, DEC, etc.) while employed by a systems house or manufacturer is highly valued and a knowledge of OA/DP integration requirements preferred. Candidates should be educated to Degree/HND level.

Please contact BOB BOWER for further information.

Ref. CW2107/2

HUTTON EXECUTIVE RECRUITMENT LTD.
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LONDON EC1A 3BE

TELEPHONE: 01-430 0434 (24 HOURS)

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SALES - IBM PLUG COMPATIBLES CITY BASED

In this highly competitive market place, excellence of equipment and keen pricing policy are two very important factors. Our clients are a huge multinational with perhaps the largest range of information processing hardware and systems available today. A division of the Organisation specialises in IBM plug compatibles where their price/performance advantage is of great benefit. Important sales vacancies have been created in two areas:

4300 SERIES AND ABOVE
OTE £30,000+ AND CAR

To sell a range of compatible processors for database, communications and interactive applications, fully compatible with the most advanced operating systems such as VM/SP, DOS/VSE and MVS/SP using the most advanced VLSI/VSI technology.

3270 DISPLAY SYSTEMS CONTROL UNITS DISPLAYS AND PRINTERS

OTE £20,000-£24,000 AND CAR

To sell a unique interactive display system using the latest micro technology, creating total flexibility including BSC, SDLC/SNA systems.

ONLY EXPERIENCED PCM SALES EXECUTIVES NEED APPLY FOR THE FIRST CATEGORY. BRIGHT S.E.s WITH SALES POTENTIAL MAY BE CONSIDERED FOR THE SECOND.

Contact BOB BOWER, quoting reference CW2107/3 for further information.

(4801)

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SENIOR APPOINTMENTS - £14K +

Promote Your Experience... ...into Consultancy

You have five years experience, or more mostly gained in a systems development environment.

You have worked in Banking or Insurance, on the development of on-line applications, using database.

Or, your background is in another application field in which you can offer strong competence. You are a brilliant Designer, a skilled Analyst, a successful Team Leader.

If your experience includes IBM mainframes, H.P. 3000, Tandem, Honeywell, VAX or Data General, it is a definite advantage.

You have a mature personality, sound interpersonal skills and leadership potential. You are aged 28 to 40, educated at least to 'A' level or equivalent, preferably with a degree or professional qualification. You now want more business and technical variety within a systems development environment.

You want to move into consultancy to communicate your expertise to client users.

You want to get to the top of your profession by learning the techniques and skills of a top consultancy.

Such an opportunity is open to you through the new vacancies created in the Systems Development Division of an International Consultancy. Our Client has an enviable reputation in the field of Information Systems consultancy and Training and can offer the challenge to rise to project management and consultancy.

Contact **Renée Nute** on 01 935 0671 or 01 874 6372 evenings and weekends, or send your C.V. to her at the London address below.

(4882)

Analysts Designers Team Leaders

**£13,000 - £15,500
+ Car + Bonus for
Senior Positions**

London

Technical, Sales & Management Appointments

Specialist Computer Recruitment Ltd	SOUTH James House, 46 James Street, London W1M 5HS 01-835 0671/488 0461	MILANDS & INTERNATIONAL 35-37 Great Charles Street, Queensway, Birmingham B3 3JY 021-236 3781	NORTH International House, 84 Deansgate, Manchester M3 2ER 061-833 0427	BELGIUM Avenue Louise 327, Boite 4, 1050 Bruxelles 010 322-640 715/771	HOLLAND Willemsparkweg 92 1071 H M Amsterdam 010 3120-760947
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CAD SOFTWARE ENGINEERS

Following the highly successful launch of the Artworker CAD system for the design of printed circuits, Wayne Kerr Datum Ltd. are seeking additional Software Engineers to further strengthen the design team.

These well rewarded positions offer challenging work and excellent opportunity in an exciting market.

Applicants should apply to:

Wayne Kerr Datum Limited
Woolborough Lane
Crawley Industrial Estate
Crawley, W. Sussex

Tel: 0293 543266



(4872)

Imperial College of Science and Technology

Administrative Computing Development Officer

The College is in the process of expanding its administrative computing services in order to establish a set of unified data bases around which the software packages required by Central Administrative Sections can be expanded or developed. An important additional requirement is to develop a management information service for senior management. The College has a student population of 4,700 and a staff of 3,000.

An experienced manager is required for the development and direction of this project. Candidates should have experience in the design and use of data bases for administrative purposes. Proven success in the management of small software teams and in the development of structured, fully documented software is important.

Appointment will be made in the salary range £13,515 to £18,825 per annum plus £1,188 London Allowance.

Further particulars and application forms are available from the Personnel Secretary, Imperial College of Science and Technology, London SW7 2AZ, to whom applications should be submitted by 12 August 1983.

(4873)

RECRUITMENT CONSULTANTS

starting package from £15,000 + Car

WINDSOR & MUNICH

Kramer Westfield is a small, effective, specialist consultancy providing expertise to high technology clients. Demand for our services has resulted in the need to augment our team by the appointment of two new consultants, who will focus on the semiconductor and communications market sectors.

The role of consultant is a demanding one, requiring a blend of communication skills, creative ability and the capacity for hard sustained effort. Handling assignments for top UK and European management means the need for personal credibility and influence is essential; a sense of humour also helps!

If you are aged 25-35, currently in recruitment or high technology sales/engineering and would enjoy the rewards of operating within a small, close-knit team then we would like to hear from you. You will receive a high base salary, attractive bonuses, company car, private health scheme and work from prestigious new offices.

Applicants, male or female, should contact Martin Warner or Paul Child on Windsor (07535) 56155 or 04868 7403 evenings and weekends, or write to Kramer Westfield Associates Ltd., 23 Victoria Street, Windsor, Berks SLA 1HE

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Short- and long-term contracts are available up to £600 per week. We will also have a requirement for a

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In a few weeks. Salary similar to above.

Send your c.v. to:
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Telephone Amsterdam 237345 for further information.

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Systems Professionals

Looking for your first career move?

Your first move is probably the most difficult one you'll ever make. You can't afford a mistake, but how do you know you're choosing the right company?

We are convinced we've found them. Our client believes people are their strength and their commitment to their people is wholehearted. In their purpose-built development centre, you'll find both the tools and the backing to develop your skills to their maximum potential—and you'll learn those new skills you need to become involved in projects at the very forefront of technology.

Because of their policy of continued expansion our clients are now seeking dedicated professionals in the following areas:

- Office communication systems • Data communications
- Local and wide area networks • Software tools

Applicants should have a degree in computer science, electronic engineering, or a similar discipline, and a minimum of two years' development experience in real-time applications.

For further information about these positions please contact Edith Watson at Computer Search and Selection, Hamilton House, Marlowes, Hemel Hempstead, Herts HP1 1BB. Tel: Hemel Hempstead (0442) 40761.

Systems Programmers and Consultants

For the development of systems tools and utilities, including the provision of a portable toolset based on the UNIX operating system. IBM or VAX background preferred, and a knowledge of 'C' or PL/M would be an advantage.

Software Engineers

To become part of a team currently developing office communications and networking software for Z80 based microcomputers.

PL/1 Programmers

To customise generic systems software for PABX applications. Knowledge of MVS essential. Experience of IMS or SPF would be an advantage.

Team Leader, Engineering Development

The successful applicant will be responsible for a team of up to 6 hardware engineers. You should have a minimum of 5 years' development experience and a sound appreciation of both hardware and software, particularly in INTEL or Z80 based systems.

Hardware Engineers

For a variety of applications up to and including the prototyping of new products. Some software knowledge would be an advantage.

Computer Search & Selection

Engineering Manager

Advanced Portable Micro Computers

Southern Based

c£15,000+Car+Benefits

A multi-million dollar turnover corporation is enjoying considerable success in North America with a product acknowledged as an industry leader. It is recognised as the world's most powerful, portable IBM P.C. compatible micro computer.

To further its worldwide growth the Corporation has recently formed a European subsidiary with exclusive distribution rights to this most advanced computer and wishes to maintain its reputation for reliability and quality control gained over many years as a responsible manufacturer, supplier and innovator of new products.

The Organisation now seeks to appoint an experienced Engineering Manager from within the micro computer/personal computing industry to assume direct responsibility for quality assurance and warranty, during a period of predicted growth, where, reporting to the European Technical Manager, the individual will organise product quality control, test, warranty, service and maintenance standards and operations.

Your background should include sound engineering

management and technical experience in micro computing where ideally you will have been directly involved in quality control, warranty costing and negotiating dealer service and maintenance contracts.

This is a rare opportunity to manage and instigate reputable standards, where future personal and career growth is considerable within such a high technology group and therefore demands dynamic and ambitious individuals.

To be considered against this new opportunity, please contact our Advising Consultant **Roger Dorricott** on **01-935 0671** (24 hour answering service) or submit your Curriculum Vitae to him at the London office address below.

Your application will be treated in strictest confidence and you are assured of a prompt and relevant reply.

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SOUTH
James House, 46 James Street,
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35-37 Great Charles Street,
Dunsmuir, Birmingham B3 3JY
021-238 3781

NORTH
International House, 84 Deansgate,
Manchester M3 2ER
061-833 0427

BELOIRUM
Avenue Louise 327
Boite 4, 1050 Bruxelles
010 322-840 7151/71

HOLLAND
Willemsparkweg 92,
1071 H M Amsterdam
010 3120-760947

SYSTEMS MANAGER/PROGRAMMER BEDS c.£8-11k + CAR

International Company situated in rural Beds. are seeking a Systems Programmer to be responsible for technical support functions. The candidate will have an extensive DEC, PDP background under RSTS/E using BASIC + some FORTRAN and MACRO experience.

HEALTH CARE/MUMPS SALES SUPPORT BEDS to £13k + CAR

Leading European Software House with offices in UK, Europe and the Middle East are seeking an A/P with experience of Health Care Systems using MUMPS on DEC hardware. Experience of Radiology and laboratory administration is advantageous.

IBM PROGRAMMER HERTS £7-9k

Our client, a market leader is seeking an IBM Programmer with experience of DOS/VSE Batch and on-line work. Candidates will be part of a small team working primarily on stock control systems.

SENIOR ANALYST N. LONDON/S. HERTS to £15k

Successful and expanding bureau are seeking a general commercial Analyst with at least five years' solid experience of systems. Candidates will have taken at least two projects from feasibility to implementation. PRIME experience a definite advantage.

PROGRAMMER ANALYST HERTS c.£12k

A leading manufacturer of domestic products utilising twin 34s is seeking a programmer analyst with at least three years' RPG II systems 34 experience. Our client is currently reviewing its financial systems with a view to redevelopment.

BASIC + 2 or BASIC + PROGRAMMER HERTS/BUCKS c.£8k

Two enterprising installations are seeking programmers with RSTS/E experience preferably with RMS. Applicants will be working on general Commercial Systems within small teams. Company progression and benefits are excellent.

RPG II/III PROJECT LEADER MIDDX. to £20k

A major international company is currently setting up a team to develop distribution and finance systems for its European divisions. They need a candidate with extensive GSD experience to be based in the UK with trips to mainland Europe.

IDMS DATABASE ANALYST MIDDX. c.£13½k

A successful construction company working mainly in the Petrochem Industry has a requirement for an Analyst with a good knowledge of IDMS. They are running an IBM 4341 under MVS with TSO/5PF but will consider candidates from other hardware backgrounds.

IBM ANALYST PROGRAMMER MIDDX. to £11k

A multinational company manufacturing and distributing office equipment is developing order processing systems on IBM mainframes. They are seeking an A/P with about three years' experience including some COBOL on IBM to work on systems from feasibility to implementation.

ICL SENIOR PROGRAMMER MIDDX. c.£8k

Part of a international engineering group, this company is involved in the developing distributive systems on ICL 2900s. They require an applicant with at least two years' COBOL to be involved in systems from design to commissioning.

DEC ANALYST PROGRAMMER MIDDX. c.£12k

This company provides turnkey systems based on DEC hardware. Due to continuing expansion, they require candidates with at least three years' experience on PDP 11s or VAX to work both in-house and on customer sites.

SENIOR CONSULTANTS IBM MIDDX. c.£15k + CAR

A services organisation of a multinational having diverse interest working mainly on IBM mainframe systems needs a candidate with extensive DP experience including some IBM and accounts/ledgers experience. Must display excellent communications skills and have a desire to play a major role within the development division.

For further information contact Nick Lewis (Middd positions) or Chris Chahade (other positions).
HOWLETT COMPUTER SERVICES
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Beds LU7 7BR
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(evenings/weekends).

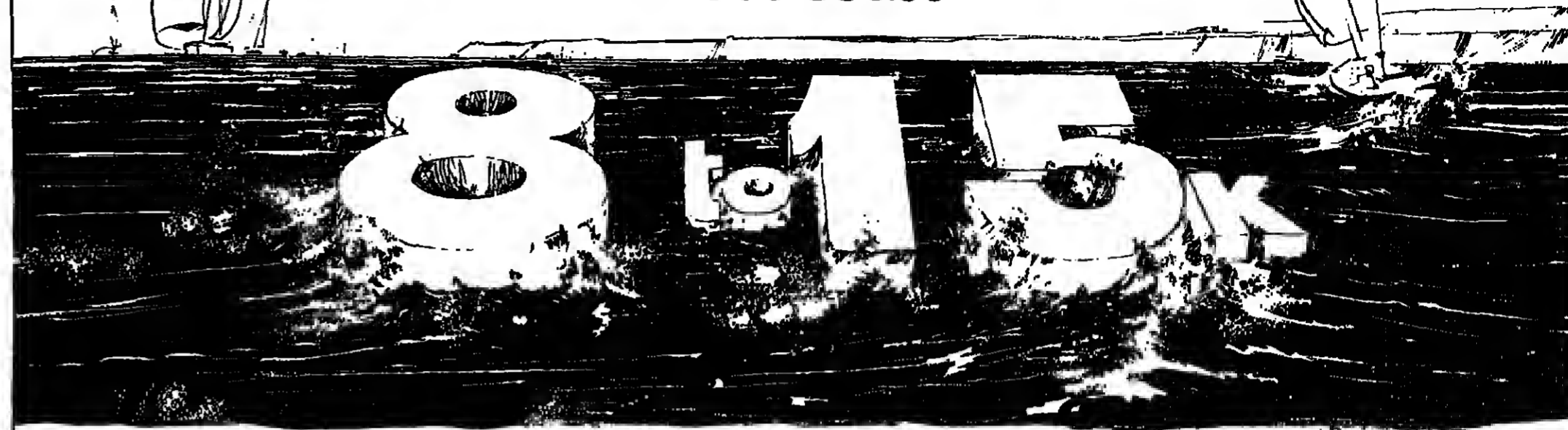


HOWLETT

COMPUTER SERVICES

SOFTWARE ENGINEERS

Dorset coast



Our buoyant mood stems from important new orders won in both UK and overseas markets for our advanced data communications and computer controlled urban traffic systems. We now wish to recruit qualified engineers at various levels in the following areas.

PACKET SWITCHING, DATA NETWORKS, S.P.C. TELEX SWITCHING SYSTEMS with Distributed Processing architecture and TELETYPE CONVERSION FACILITIES, a revolutionary microprocessor controlled VEHICLE IDENTIFICATION SYSTEM for a new road traffic application.

A substantial investment programme is providing the latest software facilities for the efficient design of new product systems. Engineers who join us now can expect to gain valuable experience. We wish to make the following appointments:-

PROJECT LEADERS

These posts will suit experienced real-time Software Design Engineers who wish to make a career move towards management. They will be involved on the technical issues from system design and specification through to acceptance testing, and exercise leadership and control over groups of software engineers.

DESIGNERS AND ENGINEERS

There are vacancies to suit those with several years' real-time engineering software design and implementation experience. A background in any one of the following would be an advantage but is by no means essential. CORAL 66, C, PLM, ASSEMBLER, INTEL 8086/88 DEC VAX 11/780 DEC PDP 11 (RSX 11M), UNIX, X25 PROTOCOLS, NETWORK MANAGEMENT, CDD.

Salary is negotiable and a generous relocation package will assist your move to a delightful part of the Dorset coast, where housing is reasonably priced.

To apply either telephone Poole (0202) 675161 (ext. 2028) between 9am and 5.30pm until July 28th quoting reference CW/P/832 or fill in the Quick Response Coupon and post to Glyn Griffiths, Plessey Controls Limited, Sopers Lane, Poole, Dorset BH17 7ER.

PLESSEY

QUICK RESPONSE COUPON

Name Age
Address
Tel. Day Evening
(If you wish to state)
Present job title and nature of work
(Continue on separate sheet if required)
Software engineering experience (years)
Name of present employer and present salary
(If you wish to state)
I am interested in (posts applying for)

Systems Analysts

Berks to £18K

A large group manufacturing consumer products requires high calibre analysts with a minimum 3 years' experience of project development from initial investigation to implementation with blue chip organisations. Age range mid 20's to early 30's. Good degree essential. Re-location package. Exceptional prospects. Ref. 737

Systems Analysts

Berks to £13.5K+

A major group operation with a heavy investment in a growing IBM mainframe network seeks several analysts to help develop new marketing, manufacturing and accounting systems. A strong IBM background and experience of on-line databases is required. Excellent benefits and prospects. Re-location assistance. Ref. 734

IBM A/Programmers

Berks £10.5-16K

The services division of a manufacturing group require analyst programmers aged 25-32 years for a support function involving client liaison and systems enhancements. Previous analysis and a minimum 2 years PLI or Cobol experience required (IBM preferred but not essential). Excellent benefits and prospects. Ref. 737

IBM Systems Programmers

South West £10-14K

Leading financial services organisations seek IBM systems programmers with a minimum of 2 years DOS VSE or MVS experience plus CICS and preferably DL1 knowledge for systems support of major new developments. Substantial benefits and good prospects. Re-location assistance. Ref. 671

Write or telephone:

London West Computer Recruitment
Evergreen, Dauntsey, Chippenham,
Wiltshire SN15 4JA
Telephone: (0249) 891114

LWCR

London West Computer Recruitment

Honeywell Analysts, Programmers

Wilts to £14K

A large data centre servicing a group of companies has requirements for staff with a minimum of 18 months' Honeywell Level 66 or DPS 8 experience to help develop a wide range of on-line database applications. Re-location assistance. Ref. 506

RPG II/III A/Programmers

North Hants, Glos £ negotiable

Financial services and manufacturing companies wish to recruit programmers and analysts/programmers for IBM System 38 installations. A minimum 12 months of commercial applications RPG programming experience on IBM S/34 or S/38 is required. First class opportunities with excellent salaries. Re-location assistance. Ref. 787

Project Leader

West London to £12K

UK subsidiary of large US manufacturer seeks a project leader/business analyst/programmer to develop a range of financial and distribution systems on IBM Series 1 linked to an IBM mainframe. Good Cobol experience is essential. RPGII is desirable. This position reports directly to MD. Excellent prospects. Ref. 122

Senior Analyst

Wilts c. £10K

Manufacturing company requires experienced analyst aged 30-35 years to develop financial applications on CMC Microdata machines. Some programming involved. Knowledge of Database or database systems on minis is required. Commercial awareness and ability to liaise with management is essential. Re-location assistance. Ref. 798

Process Control Team Leaders

Berkshire to £14K

One of the systems divisions of a substantial high technology group requires several team leaders for process control, telemetry and industrial automation projects. High level and assembler language experience on DEC PDP and Intel or Z80 required. Degree standard desirable. Re-location assistance. Ref. 550

Office Systems Designers

Wilts., London £10-15K

A leading company manufacturing and marketing automated office systems and personal computers requires software/hardware engineers, software designers and project leaders. Microprocessor assembler and high level language experience is required. Appropriate degree essential. Excellent conditions and benefits. Ref. 692

Design Engineers

Hants., Somerset to £12K

Major companies developing a variety of military applications seek hardware design engineers with broad based experience in control systems/data logging/instrumentation/automation or similar applications. Candidates aged 24-35 years, must have HND/HNC/degree and some software experience. Attractive locations. Good benefits. Re-location assistance. Ref. 750

Real Time Engineers

West, South, Wales £10-£15K+

Major companies developing real time applications in telecommunications, process control, telemetry, industrial automation and military systems require experienced team members and project leaders. Computer Science/Engineering degrees essential, plus assembler and/or high level real time language experience. Excellent benefits. Re-location assistance. Ref. 614

CONSULTANT/ANALYST LONDON

£11,000-£15,000

Our Client is a small but well established Software House with a number of prestigious companies using their services. Their packages, based on the PICK operating system, are widely used in both the international and home markets. To maintain and increase their high standards of operation they wish to appoint a Consultant/Analyst.

Applicants should have a sound DP background with exposure to either accounting, sales or manufacturing systems and have feasibility study and project management experience. They will probably be aged between 25 and 35 years, educated to degree level and be non-smokers. As there will be a high degree of client contact candidates must be professional in appearance and attitude. They must also be able to advise customers at all levels and present the results clearly and concisely.

In return our client offers an interesting and rewarding position within a friendly but professional team specialising in the PICK operating system and using fifth generation techniques. This is an excellent career opportunity to gain experience in a wide cross section of business applications in a pleasant and flexible working environment. For further details please contact Mike Harmer.

(4710)

Apex Computer Recruitment Ltd.

404 4821

London Office:
59 Gays Inn Road,
London WC1X 8TL
Tel: 01-404 4821.

Brussels Office:
Rue Gatti de Gamond,
24, Uccle 1180 Brussels.
Tel: 010 322 377 4193.

Systems Programmer

£12,500 p.a. Add a little gloss to your career

ICI Paints Division is one of the world's largest manufacturers of decorative and protective surface coatings and our products have a wide range of industrial, commercial and domestic applications.

Throughout our operation we make extensive use of computers and at our Slough headquarters have an Amdahl 470/V7 installation with 12 mb of memory and Memorex and STC peripherals. The front end processor is a STC 3806 running under EP and NCP. Our teleprocessing network supports 200 on-line terminal users in 10 paint distribution depots, two factories and several remote batch terminals and the Division is currently running MVS SP.1 with CICS, Taskmaster, Adabas, Natural, Panacea, Panvalet, Mark IV and other software.

We're looking for an experienced Systems Programmer, male or female, to make up a team of four responsible for the Division's basic software. You should have at least two years' relevant systems experience, a good

knowledge of VTAM, Assembler and MVS and some experience of defining MSNF and NJE links. Experience of 3808 software and teleprocessing systems would also be an advantage.

If you are looking for a really challenging career opportunity and a chance to develop your systems programming experience in a dynamic software environment, this could well be the opening you've been waiting for.

We offer a competitive salary, contributory pension scheme, profit sharing, subsidised staff canteen and excellent recreational facilities.

If you are interested please apply to Mrs. Jo Towlers, Personnel Department, ICI plc Paints Division, Wexham Road, Slough, Berks.

Tel: Slough 31161, ext. 3393.



MICROCOMPUTER BUSINESS SYSTEMS MANAGER

New chain of retail computer stores is setting up a Business Systems Division at large, luxurious new Hanworth (Middlesex) H.Q. A man of exceptional ability and ambition is needed to create, develop and manage this division. Degree, business systems experience, 24-28. Ann Tatum (M.D.'s Sec), 01-898-7272.

(4748)

SUPER MINI MICRO INTERNATIONAL

Nth Surrey £10-£15K++

Leading international commercial service company is expanding its professional DP operation based on IBM System 36 Minis and Super Minis and is seeking to fill the following three additional positions:

Programmer (or Prog/Analyst)

Analyst

Senior Analyst

If you like some international travel (up to 25%) and have a keen and professional approach to justify a salary of between £10-15K, then call us now to hear more!

Consultant Ref 1002 01-844-8441 (24 hrs) (4713)

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Computer Service SYSTEMS DESIGNER Up to £14,000

We are one of the leading local authorities in the introduction of Information Systems with an active professional department where high standards and training are key priorities.

We operate an IBM 4341 with DOS-VSE, CICS and COBOL. An IBM 3083E is planned for 1984. Personal computing facilities are increasingly in use.

The majority of our work is new development, encompassing a wide variety of challenging systems, including finance, housing, libraries, planning and law.

We are currently seeking a Systems Designer for one of our three development teams. Reporting to the Project Manager, you will be involved in all aspects of project development including analysis and design, technical supervision and reviews, and implementation and documentation, using BIS Structured Methodology.

You should have a minimum of 5 years in Data Processing, preferably in an IBM environment, with at least 3 years' COBOL and some analysis experience. You should be able to communicate with both technical and user staff, and supervisory experience would be an advantage. A local authority background, while useful, is not essential.

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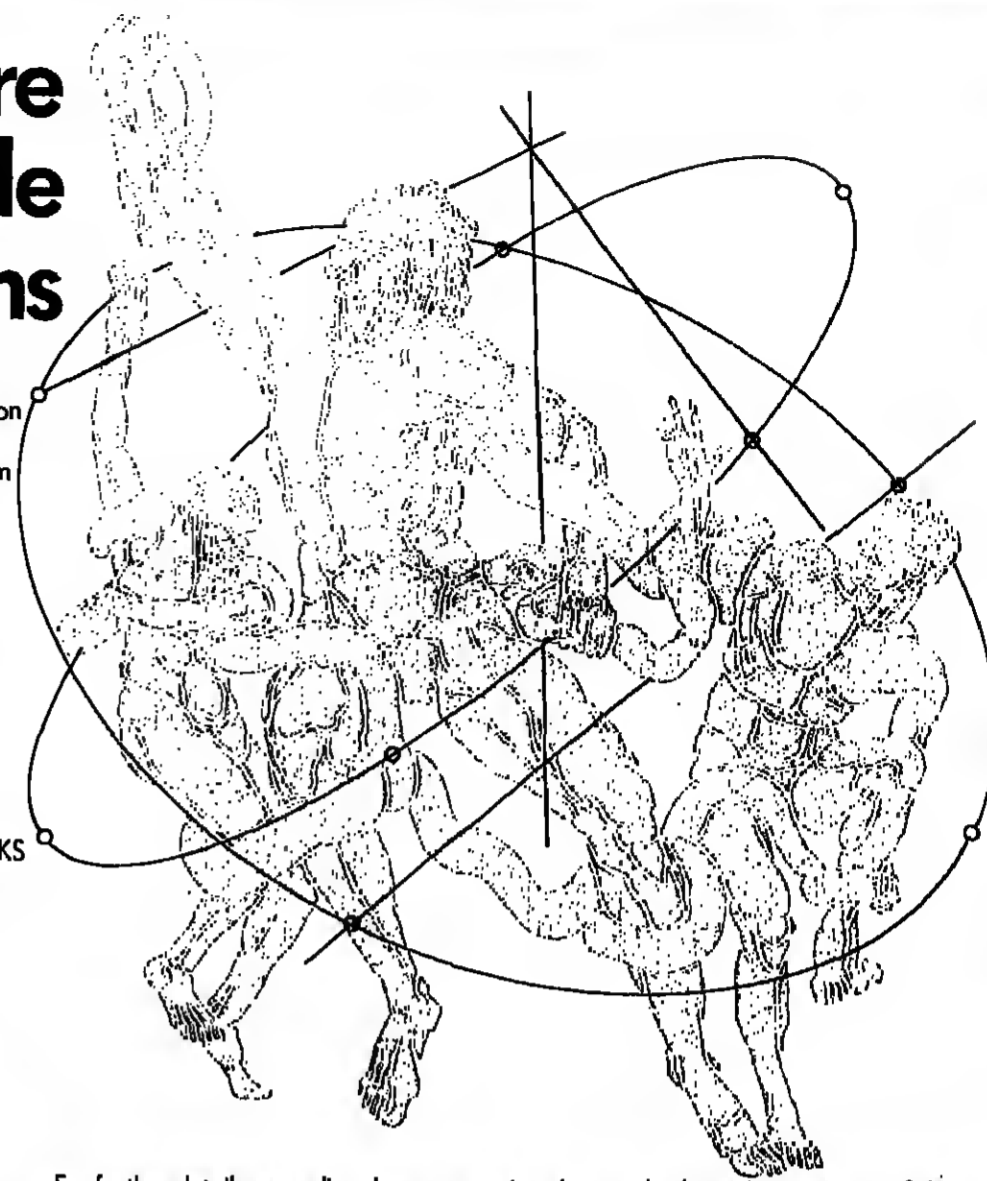
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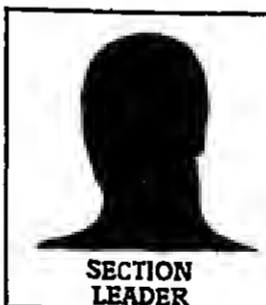
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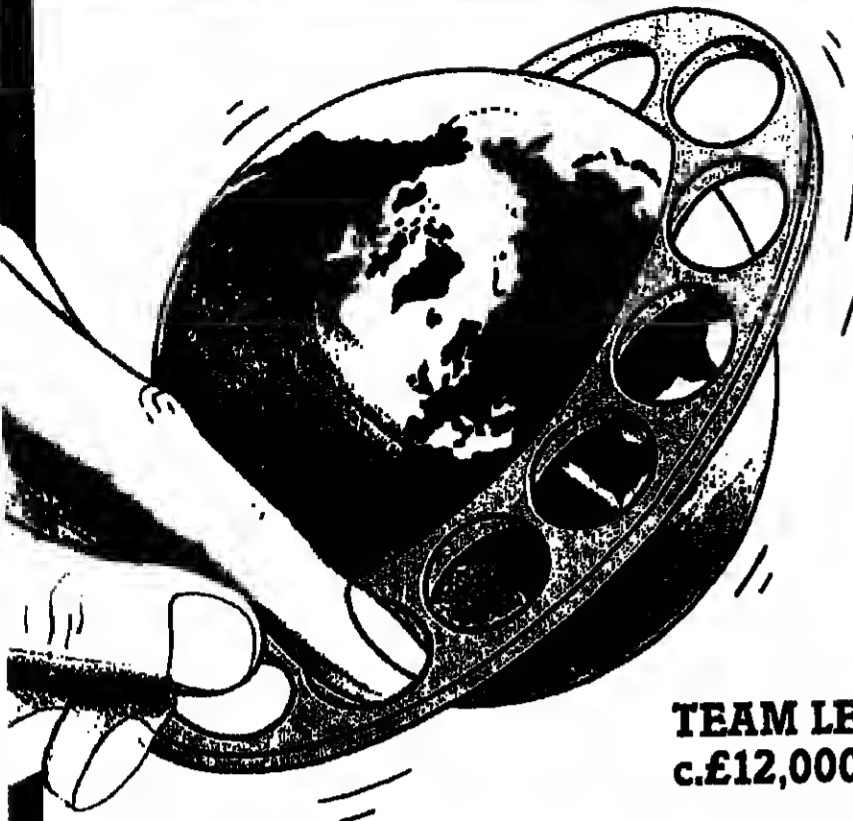
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(4724)

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- 1. Researching the market potential in terms of customers, competitors, products, and special requirements;
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- 1.1 Determining the appropriate level of sales and customer support to be provided by our UK sales office;
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- Overseas sales/marketing experience, particularly involving distributors and/or agents;
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- Considerable personal initiative and negotiating skill, and a high degree of resourcefulness.

An interest in the educational market would also be a distinct advantage.

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3. THE PERSON

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2) Clearly, there's no shortage of projects or scope at Scicon.

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If you'd like to talk about your experience and how it could match our requirements phone Bob Lomas on: 01-580 5599 during office hours or on: 01-580 9955 between 5.45pm - 9.00pm. Alternatively write with a full cv to: Sandle Walpole, Personnel, Scicon Limited, 49 Barmers Street, London W1P 4AQ.

Interviews can be arranged outside office hours.

Scicon

(4688)

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(4481)

Rise to the challenge of Systems Development

The West Midlands Passenger Transport Executive is a leading Public Transport undertaking with a fleet of 2,000 vehicles and a total of over 6,000 employees. We have embarked upon an extensive programme of applications development, including on-line and database systems. We use an ICL 2988 running under VME 2900 and a 2960 running DME/Gaorgia III. In addition, the Executive operates an ME 29 Minicomputer using TME. We are currently developing a complex telecommunications network based on Local Area Network technology designed to provide local processing facilities at sites throughout the West Midlands. The opportunity now exists for experienced computer professionals to work on projects within the development programme.

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WML West Midlands Passenger Transport Executive

(4702)

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Supported by a team of Technical Systems Analysts, your responsibilities would include providing technical support on communications, database design, office automation, distributed processing and hardware evaluation. This would necessitate research and evaluation into new technology and, on occasions, the provision of a programming service.

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(4707)

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TI 9900 Assembler Programmers
Technical Author Urgent
Corel 88 or GEC 4000 real time experience various
Univac 1100 DMS 1100 Cabel Programmer
Wang VS Cabel Programmers
CTI Cabel Programmers
Caterpillar RMS Database Programmers
VAX VMS Pascal Programmers
Material 8800 Pascal Software Engineers
Material 8800 Pascal Assembler Software Engineers
HP 3000 Image view Cabel Analyst/Programmer
Burrage 5700/800 IC commercial Application Project Leader
Burrage 5700/800 Cabel Database DMS2 Cabel Programmer
PDP 11/11 RMS Fortran 77 Programmers
Data General ADERDD5 Cabel or Business Basic Programmers
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your appointments register

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The Appointments Register

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are seeking someone, preferably between the ages of 20-25, with the following OATA GENERAL EXPERIENCE:
- at least one year of programming in business basic
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- practical operations management under RDOs, AOS, or AOS/VS

The Westbury Homes Group is the largest privately owned firm of house builders in the UK.
The Company operates from Cheltenham where the successful candidate will be based.

We have had an in-house computer facility for two years and are about to undertake our next phase of expansion. The position attracts a salary of not less than £7,000 per annum. A Company car is provided.

Other benefits include a contributory pension scheme and health insurance. Relocation expenses will be payable to the successful candidate.

Applications should be made in writing giving full details and quoting reference number CV/1 to: The Group Personnel Manager, Westbury Homes (Holdings) Ltd, Westbury House, Lansdown Road, Cheltenham, Glos., GL50 2JA.

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We are the largest independent supplier of IBM equipment in the UK. Recently we became the first computer leasing company to obtain a full listing on the London Stock Exchange.

Over the past two years we have successfully expanded our marketing staff and we now wish to recruit three additional sales executives who will be based in our London office and will be part of a separate sales team reporting into regional managers. We sell and lease all of IBM's large processors including the 43XX and 308X series, plus current disks, tapes and I/O equipment. We have a large existing customer base which predominantly consists of major users.

Applicants will need to have already demonstrated a successful track record in selling computer systems although not necessarily IBM equipment.

If you are interested in a career with us please send a CV to:

Ashley H Atchell
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London
W1M 7PF
(01) 935 7104

United Leasing the IBM alternative to IBM

Computer Programmer

c.£9,000 (Fixed Term Contract)

The Development Corporation has the exciting and major task of the regeneration of the Docklands.

This requires considerable effort and expertise in providing the appropriate support services for information planning and control. In order to achieve this, the Corporation has developed automated office systems based on Prime 750 and 550 mini-computers and is currently involved in the further development of the system.

We need to appoint a Computer Programmer who will be able to maintain and enhance automated office facilities and offer technical and software support to users.

The ideal candidate will have a relevant university degree or equivalent and will have had experience with Prime hardware. Experience as a FORTRAN and INFO programmers would be an advantage.

In the first instance please write to me for an application form, David Lowman, Personnel Manager, London Docklands Development Corporation, West India House, Millwall Dock, London E14 9TJ.

We wish to move quickly on this appointment and we intend to review completed applications not later than August 8 1983.

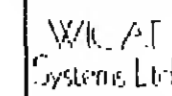


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In order to continue this exceptional growth, (T/O in excess of \$40 million per annum), WICAT are opening their new Headquarters in the Thames Valley area, this is in addition to their existing UK operation.

As a result of this expansion WICAT are seeking to employ a UK Sales Manager, whose responsibilities will include generating new business with major companies and planning and developing the UK salesforce.

Ideally applicants will already be in a similar role, with experience in selling mini/mainframe or related hardware products. In return the company offers an exciting opportunity to play a major role in one of the most successful and rapidly expanding high technology companies in the UK.

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We are looking for Senior or Technical Support Level Engineers with considerable in-depth experience of ICL 2900 mainframes and/or associated controllers.

The successful applicants will be based either at a major computer site in the London Area or at Wokingham and may be expected to travel to other UK locations in a support function.

These are key appointments offering exceptional career prospects. In this with the importance of the posts, we are offering a very attractive salary and benefits package that includes profit sharing, 2 life company car, non-contributory pension, free disability insurance, BUPA.

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Doc No. 01-1983

digital

Our client, DIGITAL, are currently expanding their personnel support group to provide customer support in the following applications areas:

- Computer Tools (operating systems, languages, application generators)
- Communications
- Integrated accounting
- Financial tools

In line with this expansion, DIGITAL wish to recruit a number of APPLICATION SUPPORT SPECIALISTS experienced in these areas.

In addition to your professional skills, you must possess certain attributes which will ensure success in this demanding area. Diagnostic ability, excellent communications skills, both written and spoken, self-motivation and the ability to function effectively and calmly under pressure.

The role of Applications Support is broadly based within the organisation. It involves customer liaison, to provide both pre and post-sale user support; the analysis, evaluation and monitoring of product quality, supplying management information about market penetration and systems performance. A further development of your responsibilities would be training internal sales personnel.

For the right man or woman, with a comprehensive knowledge of applications this is an excellent opportunity for career development in a growth industry, with an internationally successful and stable organisation. A competitive salary is offered together with a full range of generous fringe benefits normally associated with an internationally successful organisation.

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(4746)

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Regional Manager
NATIONAL COMPUTER SUPPLIES
Unit H, 3 Tadman Street, Wakefield, West Yorkshire

(4728)

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Based in Warrington, Cheshire, the company seeks to appoint an experienced person to control the development of its Software located on its PRIME 560/2. The successful candidate will be experienced in FORTRAN and will have a strong background in Systems Analysis.

Applicants will need to show the ability to work with minimum supervision.

Salary negotiable.

Applications together with cv to:

Mr K. L. Waters, W. Waters & Son (Trade Protection) Limited, Gladon House, Haydock Street, WARRINGTON, WA2 7JW.

(4729)

Systems Programmer

Nottingham

Salary £8,108-£11,205 p.a.

East Midlands Electricity operate a 16 megabyte 3083B and a 12 megabyte 3033N IBM Computer using the MVS/SP1.3 Operating System. Other software includes CICS for teleprocessing, TSO for program development and personal computing, and the IMS/DBI database management system. A network of over 350 terminals is supported.

The successful applicant will be required to work in a small team specialising in the implementation and tuning of manufacturers' software and the design and development of utility routines and programs. Sound and proven ability in Assembly and/or COBOL languages is required. Some knowledge of IBM Operating Systems and Utility software would be an advantage. Initial salary will be based on experience and will be supported by attractive fringe benefits.

Application forms, obtainable from the Personnel Manager, E.M.E.B., PO Box 4, North P.O.S., 308 Coppice Road, Arnold, Nottingham NG6 7HX should be returned by 4th August 1983 quoting vacancy number EM/04/83.

(4730)

WORKELECTRIC E

DISABLED LIVING FOUNDATION

Analyst/Programmer

An exciting and prestigious post in a national information service on disability.

Applications are invited for a new post with the Disabled Living Foundation's Information Service for one year with possibility of extension.

The duties of the post will be concerned with the start up and development of a computer-based PDP 11/23 Information storage and on-line retrieval system where knowledge of databases will be relevant. A secondary task will be to extend the use of the computer in administration of the Foundation's work. The project has attracted funds from the Department of Industry.

Salary: £9,000-£10,000.
Application form and further information from: The Disabled Living Foundation, 348 Kensington High Street, London W14 8NS. Telephone: 01-802 2491.

(4732)

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(4733)

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IBM SYSTEM 38, MAAPICS - PROGRAMMER	- LONDON
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ME29 TME, IDMS - DESIGNER	- LONDON
ICL SYSTEM 25 - ANALYST	- MIDDLESEX
ICL VME, COBOL, IDMS, TPMS - SYSTEMS TESTERS	- MANCHESTER
ICL 2900 VME/B, COBOL, TPMS, IDMS - DESIGNER	- LONDON
ICL 2900 VME/B, COBOL, TPMS, IDMS - PROGRAMMER	- LONDON
ICL 2900 VME, COBOL, TPMS - PROGRAMMER	- SURREY
ICL 2900, IDMS - ANALYST	- LONDON
ICL 2900 VME/B, SCL, COBOL - ANALYST/PROGRAMMER	- LONDON
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Excellent conditions and benefits include substantial assistance with relocation expenses where appropriate.

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(3184)

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Reporting to the Operations Manager, prime responsibilities will include the installation of hardware and software environments, day-to-day systems performance, feasibility studies, project planning, programming, and the training of users.

Candidates must have worked as a leader on a major development project, and must have proven working experience of at least two different hardware installations and several computer languages.

Attractive tax free salary for discussion. Other benefits include free furnished accommodation, car, renewable married or single status contract, and UK leave with paid air fares.

Please write in confidence - giving full career and personal details to M. J. Lebbell, ref: FY1190-1.

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We are particularly interested in hearing from experienced CAD application engineers operating in the following areas:

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- (2) Printed circuit board layout.
- (3) Mechanical engineering design (finite element analysis, surfaces and solids).
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Please contact: Mr W. D. N. Davies, Calma Company, Beech House, 373/399 London Road, Cumberley, Surrey GU15 2HR. Telephone: (0276) 682021

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USA

SENIOR SOFTWARE ENGINEER (OPERATING SYSTEMS)

The person will be responsible for giving advice and support to Calma personnel and customers across the range of Calma computer systems. Experience in the use of VMS is essential. A minimum of four years' experience of the use of computers in an engineering environment is required. Experience in one or more of the following areas would be an advantage.

Communications: CAD/CAM; Numerical Control; Finite Element Modelling; Data Base Design and Implementation.

SENIOR SOFTWARE ENGINEER (COMMUNICATIONS)

The person will be responsible for giving advice and support to Calma personnel and customers on the communications software available to link Calma systems, both to each other and to other mainframe and mini computers. A minimum of four years' experience of the use of computers in an engineering environment is required.

Salary is negotiable according to experience and benefits include free membership of BUPA, a contributory pension scheme and over four weeks annual leave.

Please contact Robin Mills for an application form:

Calma Company, Beech House, 373/399 London Road, Cumberley, Surrey GU15 3HR. Telephone: (0276) 682021

(4794)

COMPUTERS

Exceptional Growth Company

Future Computers Limited is a new British company dedicated to the design and manufacture of leading micro computer systems aimed at the business market. Future Computers is backed by a consortium lead by the British Technology Group and the APA Venture Capital Fund.

The philosophy of the Company has been to create an advanced family of 16 and 32 bit computers using the best of design and technology with features to satisfy known and future needs in industry and commerce, and still priced to compete in world markets. The introduction of the Future computer range offers the business user a wider choice of planned options than has ever before been available from a micro computer manufacturer.

Starting with a powerful stand-alone micro computer, the range can grow simply and cheaply to become a fully integrated electronic office, with multi-user, multi-tasking networks and micro to mainframe communications. The 'future evolution' concept allows any size of business from the High Street to Wall Street to enter the range at a performance level to suit its needs, and grow from that point.

Senior Analyst - Systems Software

To £14,500

If you can claim two out of the following we would like to talk to you:

1. Five years experience in micro/mini computers.
2. Communications experience.
3. Responsibility for planning software development in overall design structure.
4. Knowledge of operating systems.

The successful candidates will become responsible for state-of-art developments in the following areas: INTEL 186/286; ETHERNET and other local area networks; colour graphics; Winchester controllers; CPM/86; MSDOS; UNIX.

For an informal interview or to obtain further information please call Ian Goldsmid on 01-935 0671 during office hours; alternatively send your confidential resume to the London address below.

Technical Sales & Management Appointments

Specialist Computer Recruitment Ltd

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James House, 46 James Street,
London W1M 5HS
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021-236 3781

NORTH
International House, 84 Queensgate,
Manchester M3 2ER
061-833 0427

BELGIUM
Avenue Louise 327,
Boite 4, 1050 Bruxelles
010 322-540 7151/71

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1071 H M Amsterdam
010 3120-780947

SALES EXECUTIVE

required for Codex (U.K.) Limited

Now well established as a permanent feature of Britain's data communications scene, Codex (U.K.) Limited is expanding its sales team and requires a TEST EQUIPMENT SALES EXECUTIVE.

The successful applicant should be qualified to at least HNC OR HND level and have experience of using high technology test equipment, preferably in the data communications field.

The position based at Manchester, will involve selling data communications test equipment in Scotland, the North of England and the Midlands.

We are offering an attractive salary plus the use of company car. Other benefits include life assurance, private health plan, pension scheme, all non-contributory, 20 days' annual holiday.

Please telephone for application form:

Miss S. J. Sewerin, Sec/ps to managing Director, Codex (U.K.) Limited
01-669 2101

(4751)

SOFTWARE ENGINEERS

LONDON, HOME COUNTIES, PROVINCES

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£10K+++ New, turn key house, ground floor opportunity for bright young commercially orientated engineer to join friendly company.

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Call Clinton on 01-543 4844

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(4613)

TECHNICAL AUTHOR COMPUTER SOFTWARE

BERKS.

Circ. £13K

Our client, an international minicomputer manufacturer, is seeking to employ a Technical Author for their "state of the art" product range. These include; a high performance transaction processor, database management system, computer networking packages, systems resilience software and some related application packages.

Responsibilities will include reviewing the technical function specifications of new software products with the development teams, writing end user overview and operation manuals for the products, and reviewing these manuals with selected management.

Ideally applicants will have:

- Minimum 5 years experience in technical authorship and/or software systems and programming.
- Proven interpersonal communications skills.
- Excellent command of written English.

In return you will enjoy an interesting position with one of the world's most prominent mini computer manufacturers.

For further details, please phone Keith Taylor at our Reading Office, or write enclosing a full C.V.

MCL

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27-29 Grayfriars Road,
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01-439 8288

Extend Your Skills to Europe...

...and a better way of life

We are looking for a skilled IBM Systems Programmer whose technical experience will include two of the following:-

* DOS/VS(E) * VM * CICS * DL/1

It is unlikely that applicants will have less than five years experience in systems programming, having been technically responsible for installing systems software, unsupervised. This technical expertise should be backed by good business skills and a personality suited to a support environment, good presentation and proven communication skills, written and verbal.

The Systems Programmer will assume a senior role within a technical support team heavily involved in the development of the operating systems and surrounding real time and database software. The team also functions as a troubleshooting unit.

The Data Centre has an English speaking environment, and comprises two 4341 mainframes with a substantial CICS network and Database. The Centre is well resourced and employs the most advanced software tools available.

The Company, Braun AG, is a subsidiary of the Gillette Group; a multi-national with a true identity for their product design on small high technology appliances, well known in the UK and worldwide.

The Data Centre is based in Kronberg, a charming ancient town easily accessible from Frankfurt and Wiesbaden.

This is a first class opportunity to enjoy the experience of living in Europe, to learn German, to advance your career in a varied and demanding technical support/software role; a totally new style.

Interested? Please contact **Renée Nute** on 01-935 0671 during office hours or 01-874 6372 evenings and weekends. Alternatively please send your C.V. to her at the London office.

Initial interviews will take place in London; second interviews in Germany.

Senior Systems Programmer

Database

Teleprocessing

£15,000-£20,000

WESTERN GERMANY

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Queensway, Birmingham B3 3JY
021-236 3781

NORTH
International House, 84 Deansgate,
Manchester M3 2ER
061-833 0427

BELGIUM
Avenue Louise 327,
Boite 4, 1050 Brussels
010 322-846 7181/71

HOLLAND
Williamspleinweg 92,
1071 H.M. Amsterdam
010 3120-780947

alba

Aluminium Bahrain (ALBA) is the major aluminium producer in the Arabian Gulf. Established in 1969, the company now employs some 2000 local and expatriate staff. Current major expansion creates a rewarding opportunity for a:

Senior Programmer COBOL

Benefits package £20,900 net of tax¹ BAHRAIN

To make a significant contribution within a 3 year contract to the company's established Central Computer Department. Set up in 1974, and now employing some 30 staff, the department is involved in the development of on-line systems on an IBM 4331.

Candidates should have a minimum of 3 years' COBOL experience plus a knowledge of VSAM, ICCR/CMS, CICS or MANTIS.

Salary, at present totally tax-free and freely transferable, will be negotiable in five-figure range.

In addition, substantial benefits include: * 32 working days' annual leave plus 12 days of public holidays * rent free furnished air-conditioned accommodation * full recruitment and repatriation expenses * annual return air fares for employee and family * assisted education for children * free medical care and life assurance.

¹ Benefits calculated at current exchange rates.

Bahrain is a stable country with a liberal government. English is widely spoken and the company is experienced in the rapid and smooth entry of expatriate staff into the local community. Extensive sports and social facilities exist.

Please write with full details to: K. W. Rows,
Alba Smelter Services Ltd, Standbrook House,
12-5 Old Bond Street, London W1X 3TB.

MICRO TRAINING CONSULTANT

WEST LONDON £10-£11K+CAR

Our client, the UK operation of this leading micro software company who specialise in financial packages, are seeking a training consultant who can complement their 1983 expansion programme.

The prospective candidate should come from a training environment who can demonstrate experience in the following areas:

- Developing and conducting training courses for the dealer and End User Market.

- Experience of ACCOUNTING applications and Office Productivity Systems.

You must be mature, self-motivated, bright and have an outgoing personality with good communication skills.

An excellent remuneration package is offered including overseas travel, company car, bonus and BUPA.

For more information on the next career move you'll never regret, ring SHIRLEY FRANCIS, quoting Ref: 6626.

(44741)

Lloyd Chapman Associates

123 New Bond Street, London W1Y 9AE. 01-499 7751

Freelancers...

...in the North of England and Scotland who are available now or in the near future are invited to contact me, Peter Moore, to discuss a variety of interesting and rewarding assignments throughout the UK and overseas

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(Manufacturing)

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S. E. ENGLAND

Our client, an international blue chip electronics corporation, has always been ahead of the field in the provision of sophisticated business systems and information technology. Recently established and equipped to cope with continuing expansion, the Business Systems function provides an on-going service to all operational activities. Increasing work load has created a need for an ambitious man or woman for a key post as Project Leader. Engaged on the development and installation of on-line package systems, the suitable job-holder will:-

- possess a degree or equivalent qualification in a relevant subject, plus more than 3 years E.D.P. experience in a Manufacturing environment
- be an effective communicator, able to direct and control a small team and deal with top level user management
- maintain close liaison with colleagues in order to analyse and verify user requirements, identify problems, advise on techniques, prepare formal proposals, test and implement approved systems
- have experience of systems operating on HP3000, DEC/VAX or similar and the use of Cobol, Basic, Fortran languages.

The systems network is extensive, the work exciting and career prospects exceptional. *In addition to basic salary, extra project hours are paid when worked. Conditions, benefits and relocation are excellent. Apply in strictest confidence quoting Ref. R/25.

MA

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(Computer Management Selection Division),
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Highly competitive rates for programmers and analyst/programmers. Register now.

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PL/1, IMS, DB/DC
DBS, COBOL, ADABAS
System 38, RPG 111

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Surrey
London
Herts
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3 months
3 months
1 year
3 months

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VME/B, COBOL, DMS/TP

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6 months
3 months
6 months
3-6 months
3-4 months
3-6 months

Contact Lauren Crowe

MARCOL 01-402 9355

Computer Systems

49 Queen's Gardens, London W.2.

If systems development is your strength and IBM System 38 your experience, you're our kind of Programmer

c.£9,000

Epsom, Surrey

Durst UK, based in Epsom, Surrey, part of an international group designing, manufacturing and marketing photographic processing, printing and enlarging equipment throughout the world.

The company's total commitment to Data Processing extends into many internal functions and is highlighted by the development of a totally interactive system, advanced process control, as well as office automation, based on the IBM System 38 model 7 using RPG/III. It is interesting to record that the company's development of computer applications has made the installation an IBM reference site.

For young computer professionals looking to make their mark in a small team environment and develop a career in systems development, this is an ideal opportunity to become involved in new projects. This will involve working closely with users and management teams identifying their needs and developing and implementing new systems.

The need is for a graduate-calibre Programmer ideally aged early - mid 20's, who has 6-9 months' experience of System 38 and good communication and interpersonal skills. You should also be hard-working, a good team member and ambitious to develop into a broader role involving systems analysis.

We'll offer a salary negotiable up to £9,000 p.a. plus the benefits to be expected from a successful international company.

If you have the ability and enthusiasm to work in a career-stretching role where your knowledge and talents are constantly challenged, we'd like to hear from you.

Please write giving details of your career to date to: J. D. O'Mahony, Personnel Manager, DURST (UK) LIMITED, Longmead Industrial Estate, Felslead Road, Epsom, Surrey KT19 7AR. Tel: Epsom 26262.

Durst

PHOTOGRAPHIC EQUIPMENT

Real-Time Software Professionals

To £15,000 p.a.

Attractive south coast location

Genuine career progression, improved technical skills and an excellent rewards package - those are just some of the prospects awaiting talented Software Engineers with our client, one of the world leaders in the field of non-defence, advanced electronics and data communications technology.

The company's success is reflected not only in bulging order books but also in an expansion programme which dictates that they appoint additional real-time software professionals at all levels - from Programmers to Project Managers.

Working at the very forefront of new technology, you will join a small team environment. Projects are carried out on a range of mini and microcomputers. Both high and low level languages are utilised and you may have the opportunity of working in 'C' under UNIX.

This is a highly stimulating and demanding environment calling for people of graduate calibre or equivalent who can offer a minimum of two years' real-time development. Some communications experience would also be advantageous.

These posts enjoy the considerable advantage of an extremely attractive semi-rural, south coast location with reasonably priced housing and first-class amenities. In addition, there is a substantial rewards package, comprising a high basic salary and generous allowances for convenient daytime shifts. Enhanced earnings through voluntary, paid overtime, are also available. A comprehensive range of benefits is included together with a valuable relocation package.

Interested men or women should contact Patrick Convey quoting reference no. CW/321.

18th Floor, The Rotunda, New Street, Birmingham B2 4PA
Tel: 021-632 6848 (24 Hours)

CPC

COMPUTER PROGRAMS CONSULTANTS LTD

(4710)

Logistix

Logistix Recruitment Limited

10 Grenville Place, London SW7 4RW

Telephone 01-373 3063

Systems Designers/Progs

S. Home Counties: Salaries to £15K

A series of newly won contracts, gained by a rapidly expanding Systems and Software House, has given rise to a number of vacancies for Systems Designers. Ideally, applicants should be between 26 and 32 years old and hold at least one degree in Computer Science or a numerate subject. Industrial experience must have been gained in a real-time environment and candidates should have participated in the design and implementation of complex technical or systems software. Fluency in PASCAL, FORTRAN and an Assembler is essential, with preference being shown to those with knowledge of DEC or Modcomp hardware. As our Client's current projects include the design and development of communications networks, graphics and interactive terminal systems, experience in any of these fields will be welcomed. Ref: L/16/A

VAX/Fortran Programmers

Central London: Salaries to £12K

An international Publishing House has recently established a subsidiary to develop and market information and bibliographic databases. The company now has an immediate requirement for both Programmers and Designers to join its Headquarters organisation. Applicants, aged 23-30 years must hold a numerate degree and preferably a higher qualification in Information Science. All candidates must offer fluency in FORTRAN preferably gained in a real-time PDP-11 or VAX environment. Experience of information retrieval and file handling is of considerable advantage for certain positions whilst Designers should have participated in the design and implementation of an on-line database system. Ref: L/16/B

Recent Graduate? Interested in Comms?

Central London: Salaries to £10K + Benefits

A leading Systems House/Consultancy has retained Logistix to assist with the recruitment of several Designers and Programmers to form new project teams in the field of communications systems development. Projects are currently being undertaken for clients in the UK, France, Benelux and Switzerland, so opportunities for travel will arise. The applications involve the design of communication networks, network gateways, message switching systems and interfaces to Teletex. Clients range from large commercial organisations to communications service providers.

SOFTWARE DESIGNERS/PROGRAMMERS: With a good numerate degree and at least two years' experience in industry, you will ideally have some knowledge of a proprietary networking system, e.g. SNA or DECNET and communications protocols. You should have experience with block structured languages and, ideally, also an Assembler.

GRADUATE PROGRAMMERS: With a good numerate degree and at least six months' experience in industry, you will probably be making your first move. Some knowledge of communications would be useful but more important is a desire to gain experience in a technically demanding environment. Knowledge of a language such as PASCAL or 'C' is desirable.

The Company is recognised as a market leader in innovative software development, particularly in communications and provides a well-defined career path for the technically motivated individual who also wants to work in a friendly atmosphere.

BENEFITS: The Company offers an excellent benefits package consisting of health and medical schemes.

APPLICATIONS: Please submit a well documented resume or alternatively telephone one of our Consultants quoting Ref: LJS/2.

C & Unix Programmers

London: Salaries to £10K

A highly respected Product Supplier is currently seeking to recruit several Systems and Applications Programmers to work on its UNIX-based range of products. Applicants, aged 22-26 years, should have graduated since 1980 with a good class honours degree in a numerate subject and have at least one year's commercial or industrial experience. Very recent M.Sc. or Ph.D. candidates are also encouraged to apply, particularly if their chosen subject matter was directly concerned with UNIX systems software. It is advantageous to be fluent in 'C' programming language and also offer PASCAL as a secondary language. Ref: L/16/C

Technical Authors

Italy: Salaries to £11K + Overseas Allowance

An internationally renowned Systems and Software House is currently seeking additional Technical Authors for permanent career positions in Italy. Suitable applicants should have a good educational background and at least 18 months' experience in the design and writing of user documentation for either a software or hardware product. A good command of the English language is essential as is the ability to communicate with both technical and non-technical personnel. Applicants who have participated in the production of a manual for end-users of an Office Automation System will be of particular interest to our Client and will attract a salary premium. Knowledge of Italian would be an advantage but it is not a prerequisite for these positions. Ref: L/16/D

Real-Time Programmers

Central London: Salaries to £9.5K

A leading Systems House and Consultancy is currently seeking to recruit additional Real-Time Programmers for its Central London Head Office. Suitable candidates should hold a numerate degree and have at least 12 months' subsequent software programming experience in an industrial environment. Your programmatic skills should preferably include fluency in one or more of the following: PASCAL, C, FORTRAN, CORAL 66 or Assembler. Hardware experience is less important, but if you are currently working in a development role on PDP-11/VAX, Intel 8080/8 or Motorola 6800/68000 you will attract a salary premium. Opportunities for career development are excellent and depending on your background and career aspirations you will be considered for the areas of Communications, Process Control, Robotics or Defence. Ref: L/16/E

Senior Analyst/Programmers

Holland

To join our existing team in The Netherlands developing a dynamic real-time, on-line database and communications system for an international oil and shipping concern. A sound knowledge of IBM System 38 is required together with RPG III.

Due to the continued expansion of the data processing facilities to incorporate the total world-wide organisation this will enable successful candidates to become involved with a major communications network from its inception. Ref: 01/05

Software Engineers/Project Leaders

Herts

As one of the UK's leading communication equipment manufacturers our client is seeking to enhance its Software Tools Development team. Although mainframe based these tools are intended for use by teams working on new micro-computer development systems. The software tools section are responsible for the design, development and support to both in-house and client users.

Successful applicants will have a minimum of 3 years real-time or communications experience, proven involvement in software tools development and/or support preferably with knowledge of UNIX and 'C'. Excellent salaries plus benefits package is offered. Ref: 01/06

Telecomms Development

Essex

Engineers, from Graduate to Senior levels, with experience in both hardware and software aspects of the telecommunications industry are required to adapt and modify existing equipment to conform to British Telecom standards and overseas customer requirements. Full large company benefits plus relocation, where applicable, is available to successful applicants. Ref: 01/07

Hardware Development Engineers

Herts

To develop hardware for a new range of mini and micro-based hardware for Electronic Mail, Office Automation, Networking and Telecommunications systems. Good design ability is a necessity with a willingness to work in a team environment. Full training will be given where required.

Previous development experience on ZILOG, INTEL or MOTOROLA hardware is advantageous plus the ability to understand the software requirements generated by the hardware development. The company's rapid growth means excellent promotion prospects.

The number and variance of current and new projects together with the most up-to-date laboratory facilities make this an opportunity not to be missed. Ref: 01/08

Lecturers

London

To join an organisation specialising in the presentation of Programming and Systems Analysis courses to DP personnel. Courses are mainly aimed at the commercial skills i.e. COBOL programming and the design of sophisticated business systems.

Candidates should have a sound programming and/or analysis background with the desire to instruct. Full training in the preparation and presentation of courses will be given as well as the opportunity to be trained in new languages, techniques, etc. These positions offer both challenge and reward. Ref: 01/09

Technical Authors

UK & Overseas

Hardware and Software authors for a large number of clients on projects covering the following topics:

- Operating Systems/conversion manuals
- User manuals for: Intelligent Terminals; UNIX & 'C' -- microprocessor development systems; commercial systems
- DEC BASIC programming manuals
- Telecommunications minis
- Systems Descriptions -- IBM System 38
- Process Control -- sales and technical documentation

Ref: 01/10

Software Engineers

Beds

To join a team developing new INTEL 8088 based machine tool control systems utilising a common core of software. Several projects are currently envisaged -- some still in the early design stage.

Applicants should have 2-3 years Process Control/Real-Time experience using INTEL and PL/M. A knowledge of ASSEMBLER would also be a distinct advantage.

A realistic salary and benefits package together with excellent future prospects in a challenging software development environment makes this a first class opportunity. Ref: 01/11

Analysts & Programmers

Surrey

The computer services division of an international group have a number of vacancies for Analysts and Programmers with experience of commercial applications on PDP 11 and/or VAX machines. These positions will involve customer liaison, implementation of new systems and enhancement to their existing ones.

Successful applicants will be professional, self-motivating, enthusiastic towards their work, effective communicators and smart. Ideally you will have 3 years relevant experience using BASIC, BASIC+ etc. and salaries will be based on this. Ref: 01/12

Take this opportunity to discuss these and other requirements by phoning Hitchin (0462) 87141 or write to:

Marketing & Recruitment Division
Industrial Artists Limited
21 Bancroft, Hitchin
Hertfordshire SG8 1JP. Telex: 828148

IA is a registered Employment Business licensed by D.O.E.

Industrial Artists Limited

Designer/Programmer

Our client requires Designer/Programmers to work on an advanced communications/information switching system.

Although working in a project team environment, candidates will have the opportunity to assume responsibility for specific tasks from the design phase through to implementation. The ability to apply initiative, communicate effectively and work without close supervision is important.

Experience of COBOL end/or TAL, or a similarly structured language (eg: CORAL) is essential; combined with communications experience in a Command and Control environment this would be ideal.

For further information please contact Jenny Dalrymple-Hay or Ian Murray West on 01-493 2947, from 8am to 10pm, Monday to Friday, or weekends, Jenny Dalrymple-Hay on Beaconsfield (04946) 4579 or Ian Murray West on (0908) 563415 quoting Ref. 9992.

DALROTH & PARTNERS LTD. 4 HALF MOON STREET, LONDON W1. 01-493 2947

Systems/Applications

Programmers

N.W. England

With British Telecom's increasingly competitive stance in the marketplace, we are revising substantially many of the computer aspects of our business.

We are now looking for specialists whose skills will make an immediate and valuable contribution to our operational effectiveness. We need a number of Programmers to join our teams working in Manchester, Liverpool, Preston, Lancaster and Blackburn, to develop end-user software for non-engineering systems.

As well as 2 'A' levels and 5 'O' levels including English Language, you should have experience in basic computing skills including programming (PL1, MBASIC and COBOL); database utilisation particularly RAMIS; and the use of packages available as programming aids. Expertise in IBM operating systems would be an advantage.

Your starting salary will be within the range of £5,058-£8,803, rising to a maximum of £11,726 (currently under review).

For an application form and further information please ring Joan Parish on FREEFONE 0014, or write to her at British Telecom, P1242, 91 London Road, Manchester M60 1HQ.

British

TELECOM

(4703)

LEIGH INSTRUMENTS (UK) LIMITED

As a subsidiary of Leigh Instruments Limited of Canada, design manufacturers of avionics equipment including flight data recording systems and support equipment. To meet an expanding activity in these fields, we urgently require the following personnel:

SOFTWARE ENGINEER

Ideally with a degree in an Engineering Science or Mathematics. Experience of Intel 16-bit micro applied to data acquisition and manipulation. Languages should include Assembler, BASIC and FORTRAN. Must be fully conversant with software development, testing, debugging and documentation. Should be practical and capable of developing a new product under own initiative. Therefore an imaginative but self-disciplined individual with the competence and maturity to work in a small company environment. Versatile knowledge and hands-on experience of hardware desirable. A significant amount of client contact will develop.

Salary negotiable, dependent upon qualifications and experience.

Five-day week, Four weeks' Holiday, Pension Scheme.

Apply with career details to: P. C. STUART, Director, Leigh Instruments (UK) Limited, 1 Bank Road, Harrogate, Yorkshire, YO10 3BY, or phone 01-888 2641 for an application form.

(4705)

URGENTLY REQUIRED

ASSEMBLER/COBOL PERSONNEL

with at least three years' experience of large banking/stockbroking systems for maintenance and other new projects

Apply with c.v. to: Bluewell, Woodham Mortimer Lodge, Malden, Essex

or telephone Rayleigh (0258) 776096

(4099)

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TRW

ANALYST/PROGRAMMER

EXCELLENT

TRW Carr Limited is a major UK manufacturing division of a large American corporation employing over 450 personnel in this country. The company are on the threshold of major software development and a significant hardware upgrade which is currently based on an IBM 4331. A vacancy now exists for an Analyst/Programmer to assume a senior role within the department and we are seeking experience in any of the following areas:

- ★ IBM MAINFRAMES
- ★ COBOL
- ★ MANUFACTURING SYSTEMS
- ★ DOB/VSE, CICS, DLI

In return TRW Carr offer competitive salaries and a comprehensive benefits package including annual bonus and company membership to BUPA.

LOCATION: NOTTINGHAMSHIRE

JA322/1

RHM

PROGRAMMER/ANALYST

c.£9,000

RHM Foods Limited is a successful company within the Grocery Division of the Rank Hovis McDougall Group, manufacturing and distributing a wide range of well-known branded grocery products. Recent expansion within our Management Services Department has created a vacancy for a Programmer/Analyst with sound Cobol programming skills gained on mainframes in a commercial environment. The position involves co-ordinating the work of a small programming team and contributing to detailed systems design. The initial task will be the re-development of an order processing/stock online system.

Our hardware is based on two ICL 2966s which support a national terminal network covering Production, Distribution, Sales, Accounting and Personnel systems. We are currently converting to VME 2500 from System 4 DME. In addition to an attractive salary and benefits package we offer good career prospects in a successful and dynamic business.

LOCATION: NW LONDON

JA322/2

BARIC

DATA CONTROLLERS

to £9,200

Baric Computing Services is an established company owned by ICL and Barclay's Bank providing a comprehensive range of services to industry and commerce. A recently expanded facilities management agreement has created a requirement for a number of Data Controllers.

These positions will provide a vital interface between the client's management and computer operations, therefore candidates must be able to represent Baric to all levels of users. Duties will include checking job set-ups and outputs, diagnosing output, liaising with user management to review processing priorities, maintaining an accurate delay/fault Production Incident Report and controlling the movements of all magnetic media outside the secure area. As part of an established group of companies Baric offer numerous opportunities for career development, excellent salaries and comprehensive conditions of employment.

LOCATION: LONDON

JA322/3

dp

Confidential Role

SOFTWARE ENGINEER

c.£9,000

Our client, a leading systems house, have a commitment to providing quality software services. To meet the manpower needs of recently acquired projects, the company have an immediate requirement for a number of Software Engineers with a minimum of two years' experience in any of the following areas:

- ★ PART OF VAX
- ★ MACRO 11/32 FORTRAN PASCAL CORAL
- ★ REAL-TIME INDUSTRIAL or SCIENTIFIC applications
- ★ NETWORKING COMMUNICATIONS PROTOCOLS

As part of our client offers excellent salaries, in a range according to experience and a comprehensive benefits package.

LOCATION: SOUTH EAST

JA322/4

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ring or send the coupon to
D.P. Recruitment
Services Ltd.
Freeport, London W5 2ET
01-567 5501

Name
Address
Home tel Work tel
I am interested in Ref.

(4730)

PUBLIC SECTOR APPOINTMENTS

CAN YOU HELP
THE POLICE?

If you have the appropriate experience, ambition and knowledge, you can help the Police further their use of computers.

SENIOR
SYSTEMS ANALYST

(Post Reference: T311)

To undertake duties on secondment to the South Yorkshire Police at Force Headquarters, Sheffield.

Salary will be in the range of £9,060-£10,539.

If you would like further information, please telephone Nick Vukovitch or Chief Inspector Hale at Police Headquarters on Sheffield (0742) 78522 extension 3529.

This is a re-advertisement - previous applicants need not re-apply.

Application form and further details can be obtained from the Chief Executive (Personnel), South Yorkshire County Council, County Hall, Sarnley or telephone Sarnley 88141 extension 266.

South Yorkshire County Council is an equal opportunities employer.

**South Yorkshire
County Council**
SETTING THE PACE



147291

THE UNIVERSITY
OF SHEFFIELD
DEPARTMENT OF
ELECTRONIC AND
ELECTRICAL
ENGINEERING
CODUS Database
Research Assistant

Applications are invited for the above post to the University of Sheffield, Department of Electronic and Electrical Engineering, CODUS Database Research Assistant.

The post is a full-time position, involving the development of a database system for the storage and retrieval of electronic and electrical engineering data. The successful candidate will be responsible for the design, development and maintenance of the database system, and for the provision of technical support to the research staff.

Applicants should have a degree in Electronic and Electrical Engineering, or a related discipline, and should have experience in the development of database systems. They should also have a good knowledge of the CODUS database system, and be able to work independently.

Applicants should send their CV, including details of their experience and qualifications, to the Department of Electronic and Electrical Engineering, University of Sheffield, Sheffield S10 2TN. Closing date: 15th August 1983.

HEREFORD AND WORCESTER COUNTY COUNCIL
WORCESTER TECHNICAL COLLEGE
DEPARTMENT OF SCIENCE AND MATHEMATICS
RESEARCH ASSISTANT
APPLICANTS SHOULD BE
RE-CONSIDERED

Applications are invited from suitably qualified persons for the following posts:

Lecturer Grade II - Computing

To be involved in the teaching of Data Processing, Systems and Programming in a wide variety of courses in the College. The successful candidate will also be expected to assist in the development of new courses.

Lecturer Grade I - Computer Studies and Numeracy

To be involved in the teaching and development of computing and numeracy to a wide range of students. The successful candidate will be required to take charge of these aspects of the curriculum and to ensure that the highest standards are maintained.

Temporary Lecturer Grade I - Computing

This post will be held for one year, commencing in September 1983. The successful candidate will be involved in the teaching of computing to a wide range of students, including those on the BTEC course.

Applicants should send their CV, including details of their experience and qualifications, to the Department of Science and Mathematics, Worcester Technical College, Worcester WR1 1AA. Closing date: 15th August 1983.

TECHNICIAN
(Grade 4)

Required in Department of Land Management and Development, University of Reading, to take responsibility of the day-to-day running of the Department's computing facility. An interest in the development of software would be an advantage. Salary in Scale £5,528-£6,702 p.a.

Application forms available from Personnel Office, Whiteknights House, University of Reading, Whiteknights, Reading, RG2 2AA. Please quote Ref. T11A.

UNIVERSITY OF CANTERBURY
PROGRAMMER/ANALYST
COMPUTER CENTRE

Applications are invited for the above post to the University of Canterbury, Computer Centre.

The post is a full-time position, involving the development and maintenance of computer systems for the University. The successful candidate will be responsible for the design, development and maintenance of the systems, and for the provision of technical support to the staff.

Applicants should have a degree in Computer Science, or a related discipline, and should have experience in the development of computer systems. They should also have a good knowledge of the University's computer systems, and be able to work independently.

Applicants should send their CV, including details of their experience and qualifications, to the Computer Centre, University of Canterbury, Christchurch, New Zealand. Closing date: 20 August 1983.

Principal Engineer
Management Systems

Salary Scale £13,725 - £15,033

Post No. SM 215

This vacancy arises due to the imminent departure of the present postholder, who with other colleagues is setting up a private company.

In West Sussex, considerable investment has been made in VAX and IBM computers and specialised peripheral hardware for graphics and data collection. Computer use extends from engineering design and drafting through information systems to financial, management and control systems.

You will be responsible for formulating policies for the expansion of computer use and office automation, and for the provision of a computer based management information service.

Under development is a Resource Management System for the administration and operation of the Direct Labour Organisation, and fourth generation software tools are being used to improve development efficiency. This project involves fundamental changes in working practices within the department.

You will need to show considerable management ability and possess an appropriate qualification for this demanding post in a technical environment.

Analyst/Programmer

Salary on a scale rising to £10,539

Post No. SQ 102

The successful applicant will work as part of a small team engaged on an extensive project for the administration and control of a direct labour construction organisation.

VAX 11/780 and 750 computers are used together with a fourth generation software development system ADMINS-11 and training in the use of the facilities will be given. Candidates should have 2 or 3 years experience in commercial applications programming using high level languages and hold an appropriate qualification.

Removal, resettlement and lodging allowances are payable in approved cases and temporary accommodation may be available.

Further details and an application form are available from County Surveyor, County Hall, Chichester, West Sussex, PO19 1RH or telephone (0243) 777973 quoting appropriate reference number. Closing Date Tuesday 16th August, 1983.

**West
Sussex
COUNTY COUNCIL**

BOX NUMBERS

Box number replies should be addressed to:

Box Number _____
c/o Computer Weekly
Quadrant House, The Quadrant
Sutton, Surrey SM2 5AS

UNIVERSITY OF BRISTOL
DEPARTMENT OF
MECHANICAL
ENGINEERING
COMPUTER AIDED DESIGN
OF BUILDING SERVICES
TWO RESEARCH
ASSISTANTS

An S.E.R.C. cooperative research project is to be established to develop computer simulation techniques for the study of the behaviour of heating and air conditioning service systems, taking account of building thermal response. This is to be used in the preparation of computer simulation models to enable plans and control systems to be selected for optimum performance, particularly with respect to energy use. The project is a leading in a series of consulting projects.

Two post-doctoral research assistants are required. One should possess expertise in computer programming and the other should have a background in engineering or building services. Applicants should possess a higher degree or equivalent post-graduate experience. Experience in the use of computers in engineering design, hydraulic fluid simulation, or computer simulation would be valuable. Salary for both posts in the range £7,180-£11,015.

Further details may be obtained from the Secretary of the Department of Mechanical Engineering, University of Bristol, Queens Building, University Walk, Bristol BS8 1TR.

DURHAM UNIVERSITY
Digital Systems Design for
Computer Graphics
RESEARCH ASSISTANT

Applications are invited for a Research Assistant to work on an established SERC project in the field of computer graphics, to produce a very high speed display processor using special purpose LSI circuits. These integrated circuits are being designed as part of the project and will be fabricated by the SERC Microelectronics Laboratories. Candidates should preferably have postgraduate study or research experience in any of the following fields: systems programming, graphics software development, digital electronics design. It will be possible to register for a higher degree based on this work.

The appointment will be for two years from as soon as possible. Initial salary on scale 18: £8,120-£10,190, plus superannuation.

Applications (three copies) should be sent to the Registrar, Science Laboratories, South Road, Durham DH1 1TA by 12 August 1983, from whom further particulars may be obtained.

RICHMOND DISTRICT COUNCIL TREASURER'S DEPARTMENT
DATA PROCESSING OFFICER £9,060-£10,539

This post is head of a small section providing all data processing facilities to the Council. Candidates for the vacancy should be computer programmers or systems analysts with at least five years' relevant experience preferably including experience of managing a team. Knowledge of computerised systems applied to District Council functions is also desirable. The Council provides a pension scheme with on-line facilities using RPG II.

Application forms and job description may be obtained from the undersigned or by telephoning Richmond 4221 ext. 239 and should be returned to: Mr. J. P. TOOLE, Chief Executive, Grade House, Farnborough, Richmond, N. Yorks. DL10 4JE.

LONDON BOROUGH OF HARRINGEY
TOTTENHAM COLLEGE OF TECHNOLOGY
High Road, London N16 4RU
Telephone: 01-262 9111
Mr. J. S. Perry, MBE, MSc, PhD, FRCS, FRIB, FIBiol.

LECTURERS GRADE 1
(New posts)

Applications are invited for the above posts from recent graduates in Computing Science or from more experienced persons with a background in Computer Systems Software/Systems Architecture. The appointments will be made at LI or SL grade commensurate with qualifications, background and experience. The starting date will be 1st September 1983, or as soon as possible thereafter.

Salary: While the range £9,060-£10,539 is shown, the minimum for a graduate with a higher national certificate in an appropriate field, and experience in the teaching of young people will be an advantage.

Candidates will be expected to have at least a Higher National Certificate in an appropriate field, and experience in the teaching of young people will be an advantage.

Salary: While the range £9,060-£10,539 is shown, the minimum for a graduate with a higher national certificate in an appropriate field, and experience in the teaching of young people will be an advantage.

Candidates will be expected to have at least a Higher National Certificate in an appropriate field, and experience in the teaching of young people will be an advantage.

Salary: While the range £9,060-£10,539 is shown, the minimum for a graduate with a higher national certificate in an appropriate field, and experience in the teaching of young people will be an advantage.

Candidates will be expected to have at least a Higher National Certificate in an appropriate field, and experience in the teaching of young people will be an advantage.

The Royal Marsden Hospital
London and Surrey

The Royal Marsden Hospital is implementing a Hospital Information System using linked PDP 11/70 and VAX 11/750 computers to serve the two branches of the Hospital in the Fulham Road SW3 and Sutton, Surrey. The system is programmed predominantly in the MUMPS programming language and is though designed to provide patient management services, it is heavily oriented towards clinical research.

The following new posts have been created in the Computer Department:

Analyst/Programmer

Salary A & C Scale 9 £9,963-£10,873 p.a.

The successful candidate will be required to develop systems for the capture and retrieval of patient information in ward, clinic and other hospital departments (clinical chemistry, radiology etc.). Close user liaison will be essential. At least two years' relevant programming experience is required. This post is based at the Sutton branch of the hospital.

Programmer/Statistician

Salary A & C Scale 8 £8,364-£11,274 p.a.

The successful candidate will be required to work in close co-operation with clinicians to set up systems to capture and analyse data for specific research projects. Initially he or she will provide support to an on-going programme for breast cancer screening. A background in statistics and at least two years' relevant programming experience are required. This post is located at the Fulham Road branch of the hospital. The Computer Department has a scientific background, having been established as a result of the close association between the Royal Marsden Hospital and the Institute of Cancer Research. The post will appeal to candidates who have scientific education and a high level of self-motivation. Applicants for both posts should have a degree, preferably a higher degree, in a relevant subject.

Application forms and job descriptions are available from the Personnel Department, Royal Marsden Hospital, Fulham Road, London SW3. Tel: 01-362 8171 Ext 445/447. Closing date 16th August 1983.

147404

CITY OF SHEFFIELD
HEAD OF COMPUTING SERVICES

(Senior Assistant Treasurer status)
Up to £18,828

ASSISTANT HEAD OF
COMPUTING SERVICES
(Information Centre)
Up to £17,550

Sheffield City Council serves the fourth largest city in the United Kingdom, employs over 30,000 staff and has an annual turnover of £400m. The Council is reviewing its computer policy and has an ambitious development plan based on an LCL Dual 2685 installation and an extensive network of D.B.S. terminals and work stations.

The above two key positions recognise the importance placed by the Council in developing a long-term information systems strategy and in seeking new solutions to the information needs of user departments.

Candidates must have over five years' experience in the management of a large O.P. department and be able to demonstrate a successful track record in systems development and implementation.

Assistance towards the cost of relocation expenses together with temporary lodging allowance will be provided in appropriate cases.

Letters of application to the City Treasurer, Town Hall, Sheffield S1 4QA, to arrive no later than 1st August.

It is the policy of Sheffield City Council to provide equal employment opportunities and consideration will be given to all suitably experienced and qualified applicants regardless of handicap, sex or race.

147405

PUBLIC SECTOR APPOINTMENTS

ANALYST/PROGRAMMER
£7,788-£11,136 pa inc

An important senior post within the Polytechnic's Computer Services area, Middlesex is one of the Country's largest Polytechnics offering students and staff both multi-access processing facilities on a DEC-10, extensive micro-computer classrooms and laboratories, computer aided graphic design, data preparation, programming advice, and other services and facilities. The Analyst/Programmer will produce and maintain systems or applications software and offer a programming advisory service to staff and students.

Relevant qualifications and at least 3 years' experience are expected, including writing technical documents, operating system command language concepts, and familiarity with a variety of programming languages. Experience of DEC-10 or PRIME computer systems an advantage.

27 or 29 days leave a year. The post is based at the Polytechnic's new building at Bourne Green, North London.

Writing reference N145A. For further information and an application form, please first call: Personal Officer, Middlesex Polytechnic, 114 Chase Side, London N14 6PN. Closing date 4 August.

147381

Middlesex Polytechnic

The Royal Borough of
KENSINGTON AND CHELSEASYSTEMS
PROGRAMMERS

— HOW IS YOUR YEAR? 9000 VERY GOOD EXCELLENT
— HOW IS YOUR CITY? 8000 VERY GOOD EXCELLENT
— HOW IS YOUR NETWORKING? 7000 VERY GOOD EXCELLENT
— HOW DO YOU LEARN THE ABOVE UNDER YOUR OWN? 6000 VERY GOOD EXCELLENT
— HOW DO YOU LIKE TO WORK FOR ONE OF THE MOST ADVANCED COMPUTER USERS AROUND? YES NO

If you scored two "GOODS" (or better), coupled with two "YES" or more than one NIGEL TROTTER on 937 5464 Ext 300 for more details and to arrange an interview.

Application forms quoting Ref: CW/332 from the Personnel Services, Town Hall, Hornton Street, London W8 7NX. Tel: 01-537 9882 (24-hour answering service). Closing date for application 8th August, 1983.

Applications are welcome from suitable qualified disabled persons.

147011

OPERATORS

IBM VM/CMS OPERATORS £9,000++

★ CAREER OPPORTUNITIES
★ 22 DAYS' HOLIDAYS
★ SPORTS AND SOCIAL CLUB
Two vacancies currently exist within this leading manufacturing organisation based in London.

Our client requires ambitious, senior operations professionals with a minimum of two years' experience. Duties will include the utilisation of a large on-line system.

These positions would suit candidates willing to expand their computer knowledge as the company offers excellent career opportunities.

PDP RSTS/E OPERATOR c £8,000

★ JOB SECURITY
★ FREE LIFE ASSURANCE
★ CAREER PROSPECTS
Due to promotion this rapidly expanding site requires an enthusiastic, competent Computer Operator with a minimum of 18 months' RSTS/E experience. Excellent opportunity for career development. Benefits include free life assurance, medical insurance, luncheon vouchers and profit share scheme.

VAX VMS OPERATORS c £7,800

★ EXPANDING SITE
★ GENUINE CAREER PATH
★ EXCELLENT WORKING CONDITIONS
This rapidly expanding highly successful advertising company, are seeking to recruit enthusiastic, career minded DEC operators, with a minimum of 12 months' experience. VMS experience not essential but would be a distinct advantage. Company offers excellent career path with excellent working conditions.

DEC/PDP/VAX
OPERATORS c £8,000

We have many requirements for a selection of DEC operators for some of the fastest growing computer companies based in London and the Home Counties.

**PRESTO
POLY
TECH**
computer recruitment limited 15 Red Lion Square London WC1R 4QH. Telephone: 01-242 9796

Systems
Analyst

Up to £12,000

Banstead

We are seeking an experienced person for this post in the Council's Computer Section. The successful candidate must be able to see a job through from initial investigation to implementation, and also supervise a small group of programmers using COBOL and RPJ.

The installation consists of an ICL ME29 with local and remote communications equipment (ICL 7600 and ICL DR5). There are also stand-alone micros located in some departments of the Council. Future system developments under consideration include both in-house developments and packaged software. Maintenance and improvement to existing in-house systems also forms part of the duties of the post.

For the right person, we offer:
★ Varied and interesting workload
★ Basic salary negotiable depending upon experience
★ Paid overtime
★ Flexible working hours
★ Staff restaurant
★ Generous relocation assistance

Phone: Reigate 42477, ext. 104 for an application form. For further information, phone Computer Manager, Mr. Williams on Burgh Heath 53430.

rb Borough of
Reigate & Banstead

147271

PORTLAND TRAINING COLLEGE FOR THE DISABLED
MANCHESTER, NOTTS.

Applications are invited for the post of
CHIEF INSTRUCTOR

to head the Business Studies Department of this College, which provides residential vocational training for adults.

Reporting to the Training Manager the responsibilities of this post would encompass the organisation and day-to-day operation of a department which provides a variety of training courses for up to 60 students.

Candidates must be expected to have experience of training and instruction in business subjects and a relevant qualification in teaching or training would be appropriate.

The College is about to introduce the use of microcomputers and related technological equipment as a means of training students for the business world. It would therefore be necessary for the Chief Instructor to be fully conversant in the use of such equipment as a learning system, and be able to introduce its use into the department.

Further particulars and application form may be obtained from the Principal, Portland Training College for the Disabled, Harlow Wood, Nottingham Road, Mansfield, Notts. NG18 4YJ. Telephone: Mansfield 725141.

147001

SYSTEMS & PROGRAMMING

ANALYST/PROGRAMMERS To £16,000

IBM PL/1

Our client, a well-known firm based in Central London are currently engaged in the development of major systems. They retain IBM mainframes and use CICS, DL/I and IMS. Candidates should possess a minimum of 2½ YEARS' PL/1 experience preferably gained in an ON-LINE environment. Applicants will be involved in the development of a wide variety of large systems with user contact. Excellent prospects to Project Leader level.

★ EMPHASIS ON TRAINING
★ PROMOTION PROSPECTS
★ REWARDING CAREER

PROGRAMMER To £11,000

IBM COBOL

This PRESTIGIOUS firm of Merchant Bankers in the CITY can offer an exciting career move for a programmer with a minimum of 12 MONTHS' IBM COBOL and 6 MONTHS' CICS experience. Ideal applicant should be ambitious, and looking to progress in to analysts. In return you will be offered a financial development projects in a progressive environment.

★ SUBSIDISED MORTGAGE, PENSION AND LIFE ASSURANCE
★ INTERNATIONAL TRAVEL ★ TRAINING IN DL/I

PROGRAMMER/ANALYST To £11,000

IBM COBOL

A rapidly expanding Service Company based in the City seeks a Programmer or a Programmer/Analyst with a minimum of TWO YEARS' COBOL, some of which should have been gained in an IBM environment. This is an ideal opportunity for an ambitious individual to develop himself in a wide range of hardware, software and applications. Opportunities for TRAINING, career advancement and travel are excellent.

★ VERY VARIED WORK ★ USER CONTACT
★ TRAINING IN TP AND DATABASE

CANNOCK CHASE DISTRICT COUNCIL
TREASURER'S DEPARTMENT

COMPUTER STAFF

The Council is installing an ICL ME29 to replace computer facilities currently being provided on an agency basis by other Authorities.

A comprehensive development plan is being prepared for the introduction of computer systems for a wide range of the Council's services and it is anticipated that these will be implemented within a two-year period.

This will provide an exciting opportunity for staff to participate in the installation of new equipment and be responsible for the development of a new and comprehensive service.

In order to ensure a smooth transition to the new arrangements the following staff are required:

COMPUTER MANAGER
GRADE PO13-7 £10,639-£11,703

This is a key post and the successful applicant will be responsible for the setting up of all computer systems in accordance with the development plan.

Applicants should have an extensive computer experience in Local Government (preferably with the ME29), experience in management and be able to liaise with users at all levels.

SYSTEMS ANALYST/PROGRAMMER - SCALE 6/801 - £8,164 - £9,882

Applicants should be experienced analysts/programmers and have a sound knowledge of ICL software preferably in a local government environment.

TRAINEE ANALYST/PROGRAMMER - TRAINEE GRADE £2,976-£3,841

This post will be suitable for applicants who already have some experience in computers in local government and wish to develop their careers further.

The Council will assist with relocation expenses in appropriate cases.

Application forms, together with further particulars are available from the Secretary, Cannock Chase District Council, P.O. Box 28, Seacroft Road, Cannock WS11 1BG or telephone Cannock 2821, Ext. 484.

Completed forms should be submitted by August 1st, 1983, for the post of Computer Manager and for the other posts by August 15th, 1983.

147010

UNIVERSITY OF ESSEX
Department of Electrical Engineering Science

Senior Lecturer/Reader in Computing Engineering

Applications are invited for the post of Senior Lecturer/Reader in Computing Engineering, to be based in the Department of Electrical Engineering Science, University of Essex, Colchester. The successful candidate should have an honours degree and relevant experience, together with a strong research background in the field of computer engineering. The post involves a significant research and teaching role in computer engineering. Applicants with an on-line ability in hardware and software with a special interest in microprocessors are an advantage.

The person appointed will be expected to teach courses at undergraduate and graduate level and to take part in and initiate research in the field of computer and microprocessor engineering. The Department has a long history of research in what has recently become known as Information Technology and this post is seen as enhancing these activities.

Applications (three copies) including a curriculum vitae and the names and addresses of three referees, should be sent to the Registrar, University of Essex, Wivenhoe Park, Colchester CO4 3SQ from whom further particulars may be obtained by 11 August 1983.

147000

PROGRAMMER ANY COBOL

To £12,000

IBM PL/1

An excellent opportunity to broaden your experience is offered by this international company based in the City. They retain IBM MAINFRAMES and IBM MICROS. If you are an ambitious young programmer who seeks early responsibility, lots of training, user contact and progression into analysis, with a minimum of 12 MONTHS' COBOL, telephone now.

★ SCOPE FOR ADVANCEMENT
★ EXPANDING SITE
★ TRAINING ON IBM MAINFRAMES AND MICROS

PROGRAMMERS To £12,000

IBM PL/1

Major expansion within this progressive company within Central London has led to vacancies for all levels of Programmers. Opportunities exist within the Systems Development Team for people with a minimum of 12 MONTHS' PL/1 experience. Our client retains IBM mainframes running under MVS using CICS, DL/I and Jackson Structured Programming. If you wish to work in an ON-LINE DATABASE environment with excellent TRAINING, TELEPHONE NOW!

★ NEW DEVELOPMENT PROJECTS
★ FLEXIBLE, SUBSIDISED RESTAURANT, PENSION AND LIFE ASSURANCE

ANALYST/PROGRAMMER To £13,500

IBM COBOL

This well-known company based in WEST LONDON, offers fantastic opportunities for individuals with a minimum of THREE YEARS' COBOL and some DL/I experience. The company offers a wide range of hardware, software and applications. Opportunities for TRAINING, career advancement and travel are excellent.

★ PROGRESSION TO PROJECT LEADER
★ EXCITING, PROFESSIONAL ENVIRONMENT

147401

Did you know?

The world beer drinking record
for 2 pints is 2.3 seconds

&
Trident are best for contracts!

FREELANCE OPPORTUNITIES

SOUTHERN 0252 516141

ADF Programmers Ref.
BURROUGHS 8800/8700 COBOL Analyst/Prog. DL 101
CDC BASIS or NASTRAN Prog. SB 103
DATAPOINT Database Databus Prog./Analyst SC 104
DG Eclipse COBOL INFOS CW 106
Hardware/Software Engineers SC 109
Honeywell GCOS, TDS DB 110

URGENT

DG Eclipse COBOL INFOS, TPMS
DG R DOS ASSEMBLER
DG R DOS or AOS BUSINESS BASIC

CW 106

IBM DATABASE Administrator with IMS DB/DC SC 113
IBM 8100 DPCX or DPPX SB 115
IBM PL1, IMS DB/OC SC 116
IBM PL1 CICS & DL1 DB 117
IBM PL1, Adebas DL 118
IBM COBOL IMS DB/OC DL 120
IBM COBOL CICS DL1, some with JSP PH 121
IBM NOMAD SB 122
IBM Series 1 expertises DB 126
IBM System 38 RFG III DB 127
IBM DRS 20 and CICS COBOL Prog. CW 129
ICL IDS Systems Prog./Designer CW 130
ICL ME29 TME range COBOL CW 132
ICL System 25 Designer and Prog. CW 133
ICL VMEB IDMS, all levels, some with TPMS CW 134
ICL 2800 VME Technical Support, all levels CW 136
ICL VMEB COBOL with SCL CW 138
INTEL 8086 Programmers DL 137

URGENT

MICRO 6802 ASSEMBLER

Ref. CW 148

Micheal Jackson structured programming SW 139
techniques with COBOL SC 142
UNIVAC 1100 FORTRAN SC 143
VAX VMS BASIC or COBOL or FORTRAN PH 144
VAX VMS CORAL B6 with INTEL 8086 DB 146
VAX VMS SYSTEL expertises
PASCAL Programmers CW 153
UNIVAC 11 TIP, DPS SB 154
VARIUM V77 SB 155
IBM VM System Programmer CW 114
Contact: STEVE CASEY, PETER HOLLIDAY
CHRIS WHETTERLY, DAVE LONKHURST
STUART BLAKE, DAVID BROWN, SANDRA CAREY
or EILEEN CARMICHAEL
CORAL B6, all levels SB 150
CPG An/Programmer SC 151
IBM PL1 IMS DB/DC, some with JSP DB 119
ICL Plan CW 147
MILITARY Real-time Designers PH 149

MIDLANDS & NORTH 021-742 4431

BURROUGHS DMS2 COBOL 74 An/Progs.
DATAPOINT, DATABUS RMS Prog.
HP3000 Images, Query, View Analysts & Progs.
IBM 8100 DPPX An/Progs - URGENT
IBM COBOL CICS DL1 An/Progs.
ICL VMEB IDMS TPMS Progs.
ICL ME29 TME TP COBOL An/Progs.
ICL ME29 TME Analysts & Progs.
PDP RSX CDRAL Progs.
PDP RSX RTL 2 Progs.
UNIVAC OS 3 RFG II Progs.
UNIVAC 1100 DMS TIP An/Progs.
IBM DS MVS Ops.
ICL ME29 Ops.
CMC Reality Anal./Programmers-URGENT

PERMANENT

IBM COBOL/PL1 CICS Progs.
IBM Database Technician
IBM Series 1 EOX/ECL Progs.
IBM MVS Ops Analyst
ICL Analyst/Project Leader

Ref N28
Ref D18
Ref D19
Ref N29
Ref D20

Contact NEIL SMITH, DAVE PARKER or
KAREN LONGCROFT

OVERSEAS 0252 516141

IRAQ

Contact: BILL EVANS
12 months + Assignments July

TEAM LEADERS AND ANALYST/PROGRAMMERS -
Honeywell Level 6 GCOS MOD 400 and
COBOL/Screenwrite experience of any; on-line batch;
IDS II, TDS, M/W and S/W Development Integration;
training and administration with Honeywell/Olivetti OS,
DB, TP Comms and H/W

- £700+ p.w. - Tax Free
- Expenses
- Free Flights
- Free Accommodation
- Overtime
- Pref. single but married status considered

SAUDI ARABIA

Contact: BILL EVANS
12 months + Assignments July/August
ANALYST/PROGRAMMERS with PL1, IMS, ADF,
TSD/SPF
• Up to £25,000 p.e.
• Free Flights
• Free Accommodation
• Paid Holidays



HOLLAND

Contact: BILL TORBITT or BILL EVANS
6 months + Assignments starting July/August
IBM OS VS1 with IDMS Dutch speaking Progs. &
Analysts
VAX VMS Assembler - Systems Programmer
IBM Systems Programmer with either VM, DOS/VSE,
CICS or OS MVS

USA

Contact: STEVE WHITING
Urgent requirements for Programmers in Chicago,
Philadelphia, Baltimore, Boston, etc.
Experience required.

IBM COBOL with IMS or OL1
IBM COBOL CICS/DL1
UNIVAC 1100 COBOL Analyst/Programmers
UNIVAC 1100 Systems Programmers
UNIVAC 1100 Team Leaders

OPERATIONS 0252 516141

BURROUGHS Large System Workflow Writer
DATA 100 Operators
ICL Gill Operators with VMEB, immediate start, long term
IBM System 3 Ops. for London, long term
Honeywell LBA or DPS 7 GCOS
IBM OS/MVS JCL Writers with CICS

Contact ALAN PAINE, MARK ATKINSON or LYN ADAMS

PERMANENT 0252 516141

URGENT SALES OPPORTUNITIES
Contact: FRED BRAMLEY

Accounts Manager - Mini Computers £30k Ref: F86
Mini-Micro Sales Executives, target earnings £25k Ref: F82
Financial Systems Sales Executives, target earnings £25k Ref: F81
Programmers with ICL COBOL and prof. SCL, Hants Ref: J117
c. £3.6k
Chief Programmer and Progs. with IBM COBOL CICS Ref: J116
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SALES BIT Getting to know Compec North's traits

IN CONTRAST to my experience of the Olympian Compec, I found the visit to its counterpart, Compec North, a pleasant one.

There was plenty of room to move around in an environment that was warm, as Mid-Summer Day for once fulfilled its obligations. We were free of the oppressive clamour that greets the visitor to the jolly, jostling London event.

For those with childhood memories that still saw long-haired and wild-haired youngsters in the now neglected no-man's-land of Belle Vue, it was a nostalgic return.

Through the broken netting and silent turnstiles, I could still hear the maddening mooseys and rowdy rounding roundabouts of many years gone by; the illusion shattered by a tense technician, tired of trying to teach his tardy terminal to talk, staggering angrily to his electronic ambulance and dumping it disconsolately in the computer cluttered boot.

My main experience of the day occurred as I entered the exhibition. A glance into the hall established that there were not as many people as the big Compec draws, yet the queues at the registration points were several times longer than I have ever witnessed at Olympia.

There was a computer related checking-in system, you see, and as any Luddite will tell you, that's where all the troubles begin.

Attendees were asked to enter complete personal details on a formal data-entry form. The allowance of only two lines for the complete postal address was unlikely to have had the blessing of the Post Office or of those asked to provide the data.

As we waited, there was time to observe that one terminal was already out of action and being attended by two experienced engineers, whilst in the adjoining position a very slow typist tried desperately to make a reluctant plastic card fit into the embossing device.

At last my turn came about for the initiation ceremony. Unfortunately, but not unexpectedly, my

It was interesting, exciting and left one wondering how far the cost/performance of computing would go

personal details were entered correctly, but I accepted this philosophically.

"What's this for?" I enquired tentatively.

"That's your rapid access enquiry card," I was confidently informed.

"For what?" I asked.

"For anything you want to know," answered the typist.

I never did find out what to do with my enquiry card.

I completed my initial tour, having absorbed as much of the exhibition as I thought was relevant, and settled down with a plastic pint of flexible shandy to consider what I had seen. If you took away the microcomputer suppliers, communications, peripherals and consumables, there wasn't much left. No sign of the major league, other than Digital Equipment.

It was all about the new, the small, the entrepreneurial and the "let's hope we'll still be in business next year" companies. It was interesting, exciting and left one wondering how far the cost/performance of computing could actually go.

It all continued to be amazing, stimulating and impressive, until I simply enquired about my business accounting needs.

In the recent past, a popular reaction to the "I've got an applications problem" was the "hardware hype". The salesman went into an enthusiastic dissertation about hardware performance and language processors.

This has been replaced by the "package panacea". It appears that everybody has a package for every business need. "You have a sales ledger requirement, we have a sales ledger package - therefore we must be able to solve your problem - and don't confuse me with any details!"

Really, this is almost as far removed from gaining the client's confidence and developing product credibility, as the heavy hardware approach.

Nobody wanted to know what business I was in, how many

transactions I envisaged, what budget I had available, what management information I required, and so on.

In other words, the salesmen concerned were either too inexperienced to understand, or too carried away with the superlatives of their solution to ask me what my problem was.

However, criticism cannot be addressed to every exhibitor. There was, for instance, a supplier of financial planning and management control systems with a very clear display of its applications and industrial capabilities.

The one and only microcomputer on its stand was undoubtedly neither a decoration nor a solution in itself and even better, its saleswoman didn't ask me if she could help, (thus avoiding the obvious response "No") but approached and said: "Let me tell you about our financial planning services."

Positive and informative, that's the way you need to be at an exhibition. Don't wait for buyers to approach you. Ask questions that get people involved.

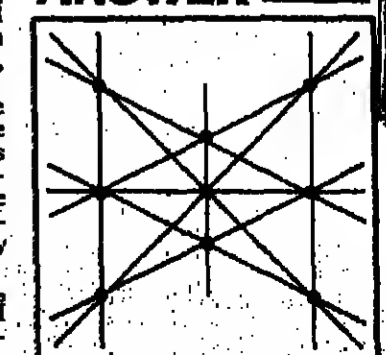
Eventually, the time came for leaving. It had been an enjoyable, even rewarding day, but one thing fell short of Olympia - I didn't meet even 10% of the friends and acquaintances I would normally expect to see at Compec. Whether that was a function of numbers or the youth of most of the exhibiting companies is a matter for speculation.

Alan Williams

Alan Williams' book, *All About Selling*, published by McGraw Hill, £8.90, is now available from Sales and Marketing Services, 29 Oxford Street, London W1.

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